Salt Wells Energy Projects Avian Protection Plan

Sierra Pacific Power Company

Ormat Technologies, Inc.

Vulcan Power Company

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ACRONYMS AND ABBREVIATIONS

	Full Phrase
APP	Avian Protection Plan
BLM	United States Department of the Interior, Bureau of Land Management
ESA	Endangered Species Act
EIS	environmental impact statement
IM	Instruction Memorandum
kV	kilovolt
MBTA	Migratory Bird Treaty Act
NDOW	Nevada Department of Wildlife
OHV	off-highway vehicle
US	United States
USC	United States Code
USFWS	United States Fish and Wildlife Service

CHAPTER 1
INTRODUCTION

An Avian Protection Plan (APP) is a project-specific document that outlines a program to reduce the potential risks of avian mortality that may result from the interaction of birds with project facilities.

There are three proponents for the three projects covered by this APP: Sierra Pacific Power Company (SPPC), Vulcan Power (Vulcan), and Ormat Technologies (Ormat). Vulcan and Ormat propose to develop geothermal resources for energy production and SPPC proposes to provide connection to the electrical grid and enhance transmission in the Fallon area. Together, the three projects are known as the Salt Wells Energy Projects. Given these multiple entities, this document serves as an agreement for each of the project proponents (Proponents). SPPC has recently developed a corporate APP (NV Energy 2010). Many of the components from their plan are included in this plan, facilitating a streamlined nexus with their existing corporate practices.

The United States (US) Department of Interior, Bureau of Land Management (BLM) has prepared the Salt Wells Energy Projects Draft Environmental Impact Statement (EIS), which was released to the public in January 2011. The EIS provides a project-specific analysis of the potential impacts to birds resulting from the three proposed projects.

1.1 PURPOSE

This APP has been prepared in compliance with federal regulations to outline discretionary project-specific practices and measures for reducing avian impacts potentially resulting from operation of the projects. The greatest concern with respect to the Salt Wells Energy Projects is the potential for avian collision or bird strikes with the power lines, as well as long-term viability of a golden eagle nesting territory. This plan presents a monitoring scheme and adaptive management framework, which will allow the Proponents to evaluate potential take and implement appropriate corrective actions.

1.2 GOALS

Implementation of this APP will fulfill numerous goals, which together strive to reduce avian mortality. The goals specific to this APP are to:

- Reduce the potential for avian mortality by implementing specific mortality reduction actions;
- Identify and isolate where avian mortality has occurred or has the potential to occur to minimize future incidents;
- Establish an avian reporting system to document incidents of electrocution and collision mortality;
- Assist the Proponents in compliance with state and federal laws regarding avian species to avoid the threat of penalties and fines;
- Improve the projects' reliability and services by reducing power outages due to avian interactions; and
- Reduce project effects on avian species through adaptive management or other actions.

1.3 STATE AND FEDERAL REGULATIONS

A variety of regulations pertain to the protection of avifauna over the life a project. Below are those most relevant to the Proponents' APP.

1.3.1 Migratory Bird Treaty Act (MBTA)

The Migratory Bird Treaty Act of 1918 (MBTA) (16 US Code [USC] 703-712) is administered by the US Fish and Wildlife Service (USFWS) and is the cornerstone of migratory bird conservation and protection in the US. The MBTA implements a series of international treaties that provide for migratory bird protection. The Act authorizes the Secretary of the Interior to regulate the taking of migratory birds; the act provides that it shall be unlawful, except as permitted by regulations, "to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird" (16 USC 703) but does not regulate habitat. The list of species protected by the Act was revised in March 2010, and includes almost all bird species (1,007 species) that are native to the US.

Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds

Signed on January 11, 2001, this Executive Order directs each federal agency taking actions that are likely to have a measureable effect on migratory bird populations to develop and implement a Memorandum of Understanding with the USFWS that promotes the conservation of migratory bird populations.

1.3.2 Bald and Golden Eagle Protection Act (BGEPA)

The Bald and Golden Eagle Protection Act of 1940 (as amended 1959, 1962, 1972, 1978) prohibits the take or possession of bald and golden eagles with limited exceptions. Take, as defined in the Act, includes, "to pursue, shoot,

shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." Disturb means, "to agitate or bother a bald or golden eagle to a degree that causes or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding or sheltering behavior."

An important eagle-use area is defined in the Act as an eagle nest, foraging area, or communal roost site that eagles rely on for breeding, sheltering, or feeding, and the landscape features surrounding such nest, foraging area, or roost site that are essential for the continued viability of the site for breeding, feeding, or sheltering eagles.

1.3.3 BLM Policy

BLM Manual 6840 provides management policy for federally listed species and BLM-designated sensitive species. State offices designate BLM sensitive species; these must be native species found on BLM-administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management. BLM-designated sensitive species are declining or are predicted to decline in numbers, or are species whose habitat is limited. BLM's list of sensitive bird species includes species that are listed or proposed for listing under the Endangered Species Act (ESA) and species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA.

BLM requires consideration and National Environmental Policy Act analysis of golden eagles and their habitat for all renewable energy projects. The BLM Instruction Memorandum (IM) on Golden Eagles (BLM IM No. 2010-156) provides direction for complying with the Act, including its implementing regulations (i.e., Eagle Rule, 50 Code of Federal Regulations parts 13 and 22) for golden eagles, and to identify steps that may be necessary within the habitat of golden eagles to ensure environmentally responsible authorization and development of renewable energy resources. The IM primarily addresses golden eagles, because a process to acquire take permits for bald eagles already exists. The IM is applicable until the USFWS establishes criteria for programmatic golden eagle permits.

1.3.4 Nevada Regulations

The State of Nevada has identified wildlife species that are declining in their range throughout Nevada or are otherwise rare and at risk of extinction. Sensitive and protected animal species are protected in Title 45 of Nevada Revised Statutes (Nevada Revised Statutes 501.10 through 503.610 and 503.620), which includes migratory birds as well as golden eagle and other raptors. Classification of wildlife species and related regulations are detailed in Chapter 503 of Nevada Administrative Code and taking of these species is

allowed only after obtaining necessary permits or authorizations from Nevada Department of Wildlife (NDOW).

CHAPTER 2
STUDY AREA

2.1 DESCRIPTION OF PROJECTS AREA

The Salt Wells Energy Projects are located within the southern portion of the Lahontan Valley as shown on Figures 1-1, Salt Wells Avian Protection Plan – North, and 1-2, Salt Wells Avian Protection Plan – South, included in Appendix A. The Lahontan Valley was historically covered by a large Pleistocene lake, Lake Lahontan. As evidence of this, the Lahontan Valley is distinguished by terminus lakes and wetlands associated with the formerly free-flowing Carson River and waters diverted from the Truckee River via the Newlands Project. At the southern end of the Lahontan Valley is the area known as Carson Lake and Pasture. The diverse and extensive wetlands of the Lahontan Valley are a crucial stop along the Pacific Flyway for hundreds of thousands of migrating shorebirds and waterfowl. As outlined in the Audubon Society's website, Carson Lake and Pasture is recognized as a significant wetland area through its inclusion into the Western Hemisphere Shorebird Reserve Network and listed as a Globally Important Bird Area by the American Bird Conservancy (Audubon Society 2010). Carson Lake and Pasture is also located within a portion of the Audubon Society's designated Lahontan Valley Wetland Important Bird Area.

Carson Lake and Pasture totals 22,700 acres, though the main wetland portion of Carson Lake is approximately 7,500 acres. Carson Pasture is currently under Bureau of Reclamation management but is intended to undergo a land transfer to the State of Nevada to be managed by NDOW as a Wildlife Management Area. The Projects Area lies primarily outside this boundary; however some components are within the Carson Pasture boundary.

Key habitat within the Projects Area includes (in order of dominance): mixed salt desert scrub, greasewood flat, agriculture and developed, Intermountain basins playa, stabilized dune, and emergent marsh and wet meadow (BLM 2011). Carson Lake and Pasture provides foraging habitat for eagles and other raptors.

Along the eastern portion of the Projects Area is a large playa, Eightmile Flat which is bisected from Carson Lake and Pasture by the Bunejug Mountains. The Bunejug Mountains provides habitat for golden eagle and other raptors, while the playa provides habitat for shorebirds.

The operational ENEL Salt Wells Geothermal Plant is located north of Eightmile Flat. A 230-kilovolt (kV) power line runs southwest from this plant, traversing Simpson Pass and connecting to the Fort Churchill to Austin 230-kV transmission line at the southern end of Carson Lake and Pasture.

2.2 DESCRIPTION OF PROPOSED PROJECTS

The Proponents propose developing geothermal resources to provide new renewable energy sources for Nevada. Combined, the three proposals could result in up to five 30- to 60-megawatt geothermal power plants with up to 71 associated wells (39 for the proposed actions and the remainder previously authorized), pipelines and associated facilities, and a 22-mile, up to 125-foot-wide ROW for a new transmission line, with substations and switching stations.

2.3 INDIVIDUAL PROJECT COMPONENTS

SPPC proposes constructing approximately 22 miles of 230-kV transmission line between Fallon, Nevada, and ENEL's Salt Wells Geothermal Power Plant, two 60-kV electric line folds 250 feet in length, two switching stations, and one substation. SPPC's project would be constructed in phases: the first phase would be construction of the line from the Pony Express Switching Station to the Carson Lake Substation (at Ormat's power plant). Phase two would be construction of the line from Carson Lake Substation to the Greenwave Substation. Phase one is expected to begin construction in 2012. Phase two timeframe is yet to be determined.

Ormat proposes constructing one power plant, one switching station, one substation, 200 feet of 230-kV interconnect power line, 6.5 miles of geothermal pipelines, up to 13 well pads, and 4.6 miles of well pad access roads. According to Ormat's Plan of Development and Utilization it would take approximately 6 months to conduct exploration drilling followed by at least 12 months of drilling injection and production wells prior to beginning construction (Ormat 2008).

Vulcan proposes constructing up to four power plants, four substations, one switching station, approximately 8 miles of 230-kV interconnect power line, up to 19 miles of geothermal pipelines, up to 26 well pads, and up to 19 miles of access roads. According to the Plan of Utilization for the Vulcan project, Vulcan anticipates that the overall development for each 30-MW binary plant or the 60-MW dual-flash plant will require approximately 30 to 36 months from filing of the POU to completion of final testing and commissioning of the units (Vulcan Power 2009). The POU would be finalized after the record of decision for the EIS is signed by BLM.

CHAPTER 3
SPECIES OF INTEREST

3.1 PROTECTED SPECIES OCCURRING WITHIN PROJECTS AREA

The term "protected species" for this APP encompasses all avian species that are protected by any one or more of the laws, policies, or regulations described in **Section 1.3**, State and Federal Regulations. These include:

- all avian species that are listed as threatened or endangered species or are proposed or candidates for listing under the ESA of 1973 as amended;
- all avian species extended protection under the MBTA;
- bald and golden eagles under the Bald and Golden Eagle Protection Act;
- all avian species that the state of Nevada extends protection to through Nevada Revised Statutes 501.10 through 503.610 and 503.620; and,
- all species identified as BLM sensitive species in Nevada.

Regardless of whether a bird species is protected by regulation, law, or agency directive, the ultimate goal of this APP is to provide protection to all avian species that may be affected by project facilities.

3.1.1 Golden Eagle (Aquila chrysaetos)

The entire Salt Wells Energy Projects Area provides suitable foraging, roosting, nesting, and migratory habitat. Golden eagles were noted within the Projects Area, as were nest outcrops and roosts. Surveys for golden eagles occurred within a four-mile radius of proposed facilities, primarily during the month of July. No occupied nest was located within lease areas during the survey period. Two unoccupied raptor nests, GOEA 1 and GOEA 2 are within one-half mile from Vulcan's proposed and existing project facilities, as is a bat and raptor roost outcrop. GOEA 1 is located on public land and is a large basalt outcrop

adjacent to an intermittently active gravel quarry on private land. It has at least four stick nests of varying size and age, most look as if they have been used for years, acquiring a notable depth of sticks. A light amount of white wash was seen on the rock, confirming activity, and golden eagles were seen using the rock in May. Nests appear to have not had significant recent use, though between examining the outcrop in May to examining it again in late July, some additional nest garnishes were noted (e.g., grass). From the nest site, activities at the quarry are not well seen or likely heard unless blasting occurs. Truck travel to and from the quarry is not obvious from the outcrop, and trucks generally do not travel the road crossing below the nest site. GOEA 1 has an approved well approximately 0.5 mile (0.9 kilometer) from the outcrop. The proposed power line is within 0.3 mile (0.47 kilometer) from the outcrop.

GOEA 2 is located on a lower basalt outcrop with a tufa mantle. This small single stick (twig) nest outcrop is shallow and relatively small for golden eagle use. The most recent nesting raptor was likely a prairie falcon, given the egg shell fragments and small prey size. Historic NDOW maps indicated a golden eagle nest within the area. The historic NDOW nest locations had some discrepancies with some nest locations being mapped in playas, meaning the transfer of paper data to digital was not entirely accurate. The NDOW mapped site may actually correspond to GOEA 1, a much more obvious feature. GOEA 2 outcrop is approximately 0.5 mile (0.8 kilometer) from two proposed and one existing well, approximately 0.8 mile (1.3 kilometer) from the proposed power plant No. 5, and 0.65 mile (1 kilometer) from the transmission line. While GOEA 2 is active with moderate amounts of whitewash it is extremely small to accommodate golden eagles. The substrate (ledge) on which the nest occurs is approximately 12 inches deep by 24 wide. It has a slight overhang making the 12 inches less usable for larger birds.

Two adult golden eagles were seen in late April above the Bunejug Mountains and were located repeated times during early May. The pair was seen using one of the unoccupied nests at, GOEA 1, appearing to be unaffiliated with an occupied nest in early May. During the July blanket environmental surveys, a recently active nest was located (GOEA 3). This nest was within 0.25 miles (0.40 kilometers) of Highway 50. This nest was obviously occupied in 2010 (possible failed nest: an egg was noted at the edge of the nest and minimal down was seen). It is located within 1.25 miles (or 2.3 kilometers) from the Ormat Project Area (see Figure 1-2). A sub-adult golden eagle was seen north of Highway 50, above Eetza Mountain near the GOEA 3 nest location in late July.

Other nests were located during the July surveys. A majority of them are inactive and are likely not to support nesting activities due to trail development and other activities, which likely preclude nesting. They are outlined below and GOEA 1- GOEA 4 are depicted on the figure 1-2.

Table 1
2010 Documented Golden Eagle Nests

Map Name	USFWS Map Convention	Territory Name	Location *(NAD 83 UTM Zone 11)*		Description
GOEA 1	NV-CHU-39118/C6-001-01	Carson Lake	39°18'51.67"N	118°37'42.39"W	*Active, whitewash, not used as a nest outcrop for a few years, 4 stick nests*
GOEA 2	NV-CHU-39118/C6-001-02	Carson Lake	39°18'9.71"N	118°37'16.91"W	*Clearly used by PRFE, unlikely GOEA due to small size, mapped as such by NDOW, one twig nest.*
GOEA 3	NV-CHU-39118/C6-001-03	Carson Lake	39°23'30.81"N	118°37'29.59"W	*Occupied 2010, possible failure, two stick nests, hot exposed site, one egg noted on edge of nest. Other nest likely PRFE*
GOEA 4	NV-CHU-39118/D5-001-01	Salt Wells	39°22'43.60"N	118°33'2.02"W	*Possible GOEA, old inactive nests, two stick nests, some whitewash on perch sites.*
GOEA 5	NV-CHU-39118/D5-002-01	Grimes Point	39°24'29.67"N	118°37'31.98"W	*Possible GOEA , old, close to trails and road, no whitewash*
GOEA 6	NV-CHU-39118/D5-002-02	Grimes Point	39°25'23.54"N	118°36'24.76"W	*Active nest outcrop, four stick nests, no whitewash on/near nests, whitewash all around*

Source: 2010 Pondera Ecological Consulting Biological Resource Survey

Like other long-lived species, golden eagles have a low reproductive rate, with their productivity linked to prey abundance and seasonal weather. Their primary prey base are rabbits and hares, especially black-tailed hares (jack rabbits) (*Lepus californicus*) (Kochert et al. 2002). The Projects Area provides ample foraging habitat and prey base.

3.1.2 Other Raptors

A variety of other raptors occur within the Projects Area, notably: Swainson's Hawk (*Buteo swainsoni*), red-tailed hawk (*B. jamaicensis*), and prairie falcon (*Falco mexicanus).* Prairie falcon nests were noted within the lease areas and both Swainson's and red-tailed hawk nests were noted near project facilities, particularly in the Fallon area. Additionally, red-tailed hawks were seen foraging though out the entire Projects Area.

3.1.3 Migratory Birds

Numerous migratory birds have been documented in the Projects Area, as 56 species of birds were recorded (BLM 2011). Species such as black-throated sparrow (*Amphispiza bilineata*), Loggerhead shrike (*Lanius ludovicianus*), horned

lark (*Eremophila alpestris*), northern mocking bird (*Mimus polyglottos*), and rock wren (*Salpinctes obsoletus*), are species associated with intermountain basins mixed salt desert scrub and were observed within the lease areas.

Shorebirds and Waterfowl

Two guilds of birds (shorebirds and waterfowl) may be particularly affected by the projects. Carson Lake and Pasture provides habitat for migratory individuals including over 150,000 ducks, 2,000 Canada geese (*Branta canadensis*), 30,000 snow geese (*Chen caerulescens*), and 130,000 shorebirds. Directly within the Projects Area in marsh and playa habitats white-faced ibis (*Plegadis chihi*), killdeer (*Charadrius vociferus*), yellow-headed blackbirds (*Xanthocephalus xanthocephalus*) and great blue heron (*Ardea herodias*) were commonly seen (BLM 2011). Carson Lake and Pasture is a significant production area for white-faced ibis, black-necked stilts (*Himantopus mexicanus*), American avocets (*Recurvirostra americana*), snowy and great egrets (*Egretta thula* and *Ardea alba)*. Species such as willet (*Tringa semipalmata*) and snowy plover (*Charadrius alexandrines*) are few in numbers but breed within the Carson Lake and Pasture area (GBBO 2010).

Breeding and migratory waterfowl within the Carson Lake area includes: redheads (*Aythya americana*), northern pintail (*Anas acuta*), and cinnamon teal (*A. cyanoptera*), (Audubon Society 2010) tundra swan (*Cygnus columbianus*) (GBBO 2010), and lesser snow goose (*Chen caerulescens caerulescens*).

3.2 BIRD POPULATION AND USE WITHIN PROJECTS AREA

3.2.1 Golden Eagle

Adequate records do not exist to provide a complete description of the size, trend, productivity, or geographic extent of the local or regional golden eagle population in western Nevada. Golden eagles are common in all western Nevada valleys, though nesting territories are likely diminishing adjacent to more urban areas such as Reno, Carson City, and Fallon. To support one breeding pair of golden eagles in western North America, 7.2 to 12 square miles (20 to 33 square kilometers) of habitat are needed (Kochert et. al. 2002).

It is likely that the nests located during the baseline surveys represent three active nesting territories. The Projects Area has not been classified as an important eagle use area by NDOW or any other agency. Activity of golden eagles within the Projects Area is likely sporadic due to existing levels of human activity (e.g., gravel quarry, drilling, OHV use). Eagle use in the past may have been more abundant that it is currently.

At least two adults and one sub-adult were noted during the baseline surveys (BLM 2011). It is unknown how many golden eagles may over-winter in the Lahontan Valley, but it is likely the numbers increase during the winter months. The population estimate for Nevada is approximately 3,000 golden eagles (GBBO 2010).

The Lahontan Valley is home to the Naval Air Station Fallon, which provides a near constant source of noise from the variety and frequency of aircraft flown from the base. Birds observed during jet flyovers did not appear to react to the loud low-flying aircraft. Studies of testing grounds for military activities showed no appreciable effect from detonations or other loud sounds by eagles (Brown et al. 1999). Golden eagles did however, respond to vehicular activity, where the birds would flush from a roost upon seeing or hearing a vehicle approach. This appears to be typical for golden eagles, as disturbance from vehicles, off-highway vehicles (OHVs), and individuals have been cited as principal anthropogenic causes of nesting failure (Kochert et al. 2002).

In addition, the population growth in the City of Fallon, which was primarily associated with Naval Air Station Fallon, has led to increased recreational use including OHV use and target practice. The recreational use, coupled with an increase in minerals and energy extraction, increases the likelihood of habitat degradation and fragmentation, which could lead to a reduction in suitable nesting territories. Therefore, there may be only two suitable nesting territories within four miles of the Projects Area, though this is speculative.

3.2.2 Other Raptors

Swainson's hawks nest in relatively low numbers throughout the Great Basin. While numerous Swainson's hawks have been observed nesting within the agricultural areas of the Lahontan Valley, there are no recent census numbers

for the region. However, the population size in Nevada is estimated at 300 individuals (GBBO 2010). Many other raptors occur with relative abundance, such as prairie falcons with 11,000 individuals in Nevada (GBB0 2010). Some resident species, such as northern harrier (*Circus cyaneus*), use the Lahontan Valley more frequently in winter, while other species, such as rough-legged hawk (*Buteo lagopus*), only use the area for over-wintering (Chisholm and Neel 2002).

3.2.3 Migratory Birds

With the exception of shorebirds and waterfowl, the upland habitats within the Projects Area have species numbers and composition that are typical of these habitats.

Shorebirds and Waterfowl

Estimates of annual shorebird use range between 250,000 and 500,000 individuals, including long-billed dowitcher (*Limnodromus scolopaceus)*, western and least sandpipers (*Calidris mauri* and *C. minutilla*), American avocet, long-billed curlew, and black-necked stilt among others (Chisholm and Neel 2002, Audubon Society 2010). Carson Lake and Pasture is noted as having one of the largest white-faced ibis nesting colonies in the western US, averaging 3,000 pairs (Audubon Society 2010). Estimates of willets are around 3,000 throughout the state and snowy plover range from 350 to 1,000 throughout the state as well (GBBO 2010). Waterfowl numbers, such as those for redhead, cinnamon teal and northern pintail, vary from year to year, though they are considered year-round residents with an influx of migratory birds particularly in the fall. Cinnamon teal numbers can be as high as 10,000 breeding pairs in the state (GBBO 2010).

CHAPTER 4
THREAT ASSESSMENT

The threat assessment examines the potential short- and long-term impacts from the development of the projects on bird populations. These include site-specific threats as well as cumulative impacts. The BLM's project-specific EIS analyzes these; however, potential impacts associated with birds are analyzed in greater detail below.

4.1 AVIAN USE OF PROJECTS AREA

As outlined in **Chapter 3**, Species of Interest, a variety of birds may be found within the Projects Area. Raptors, shorebirds and waterfowl have the most potential to be affected by the projects.

The Projects Area is highly fragmented along the northern portion of the site, while in the southern portion, the playa areas are less fragmented. All portions of the Projects Area have roads; some are well-traveled, while others are simply two-track paths. The most obvious anthropogenic disturbance comes from the considerable air traffic from the Naval Air Station Fallon as high speed fighter jets and low-flying slower moving helicopters practice maneuvers within the region. Bombing occurs further south of the Projects Area, beyond the Blow Sand Mountains. Columns of dust and smoke along, with distant explosion sounds, may be seen and heard from Carson Lake and Pasture.

4.1.1 Typical Use of Project Components

Projected avian use of the project components is largely subjective and not well-documented with the exception of transmission line towers. Actual or reported accounts of how birds use some of these features were not available.

Transmission Lines and Poles

Birds, particularly raptors, commonly perch on transmission line towers, presumably because scanning for prey is easier from a lofty perch. Perching would likely be most common in areas where the tower's height would prove advantageous, such as near Carson Lake and Pasture and agricultural areas

where prey would be more abundant. Some tower designs support nest building by raptors and corvids (e.g., crows and ravens).

Power Plants

Power plants are generally surrounded by chain link fencing, which provides a perch for migratory birds, while the inner workings of the power plant may attract species such as house sparrow (*Passer domesticus*) because of shade and areas for nesting. However, it is likely the majority of the avian species would shy away from power plants themselves because of the noise produced during power generation. These facilities are not anticipated to have substantive avian interactions and do not likely pose as threats to birds.

Substations and Switching Stations

Substations have a history of attracting birds during cold spells as they seek the warmth provided by transformers. Newer designs preclude birds from congregating near transformers, but birds would nonetheless be attracted to the chain link fence or other suitable perch sites. These facilities are not anticipated to have substantive avian interactions and do not likely pose as threats to birds.

Geothermal Wells, Injection Wells, and Pipelines

Most of the wells and pipelines are warm and may attract birds during winter months; birds could perch on the well heads and may land on the wrapped pipelines. These facilities produce a hissing noise during operation which may deter some birds. These facilities are not anticipated to have substantive avian interactions and do not likely pose as threats to birds.

4.2 CAUSES OF AVIAN MORTALITY

A variety of factors can lead to avian mortality at utility sites and two primary causes are electrocution and blunt trauma from collision. The majority of the project facilities are not anticipated to have substantive avian interactions and do not likely pose as threats to birds. These facilities are power plants, substations, switching stations, geothermal and injection wells, and pipelines.

4.2.1 Electrocution

Avian electrocutions can occur when a bird completes an electric circuit by simultaneously touching two energized parts or an energized part and a grounded part of the electrical equipment. The reason birds may complete an electric circuit can be attributed to two interrelated factors: environmental factors and engineering factors (APLIC 2006). Improperly constructed power lines, especially distribution lines, are one cause of direct mortality for eagle species and can result in electrocution of birds attempting to utilize these structures for perching and nesting (Harness and Wilson 2001). Eagle mortalities were investigated by the Department of the Interior from the early 1960s to 1995, and electrocution was reported as the second greatest cause of mortality in golden eagles and the third greatest cause for bald eagles (APLIC 2006).

Transmission Line

Electrocution of birds is unlikely from newer constructed transmission lines that use avian-safe practices. Likewise, 230-kV lines do not pose a threat via electrocution due to the distance between the conductor lines and/or ground lines. These spans are greater than six feet, which is the average wing span of a golden eagle.

Bird Nesting on Transmission Line Tower

Nests that pose the greatest risk to birds are those that are built in close proximity to energized conductors and hardware. A nest that is not in close proximity to energized parts may not be an electrocution risk in and of itself, but it could pose a risk to adult birds that may routinely land on other parts of the power pole or surrounding poles where a bird could complete an electric circuit (APLIC 2006). However, the design of the proposed towers minimizes the nesting potential because the towers do not provide adequate anchoring points for nest materials. Nesting on the towers is not an anticipated risk to birds.

Substations and Switching Stations

Electrical outages at substations have been caused by direct animal contact (electrocution), nesting, fecal contamination, and bird fecal streams. To prevent these outages, modern substations and switching stations are constructed to reduce the likelihood of birds interacting with components that may result in electrocutions (and cause power outages). This is done by shielding or enclosing transformers, bus work, circuit breakers, insulators, and switches as well as by design/layout within the stations.

4.2.2 Collision

The transmission lines pose a threat to avian species through collision with the line during flight, the effects of which, until recently, had not been studied. In 2000 and 2001, ten percent of documented golden eagle mortality from collision with small distribution power lines associated with oil and gas wells in central Montana was attributed to mid-span collisions with power lines (USFWS 2009).

Vulnerability to collision depends on many factors including bird behavior and maneuverability, topography, weather, and power line design and placement. Bird collision with power lines has been documented for decades, and risk of collision is considered highest in areas where birds congregate, such as power lines that bisect daily flight paths to meadows, wetlands and river valleys. Generally, shorebirds and waterfowl are considered most at risk of collision in locations where low light conditions or other low visibility situations exist (APLIC 1994). These assessments have been largely based on the notion that birds perceive a hazard in a manner similar to humans.

A recent study on how birds see outlined that many types of birds may have significant "blind spots," increasing risk of collision even during daylight. Movements of a birds head during flight such as scanning below for foraging or

roost site can render them blind to objects in the direction of travel. The study examined only a few species, primarily those known to have high mortality rates associated with power lines (bustards, cranes, and storks), but then extrapolated visual challenges of other orders of birds based on physiology and other published literature. These "blind spots" are related to how birds forage for food, as well as the position and size of eyes (Martin and Shaw 2010). The implication is that some species of birds are more likely to collide with power lines than others, even during optimal flight conditions.

Transmission lines are the project components within the Projects Area that have the greatest risk for avian collision. Cooling towers of the power plants are not likely to pose a threat, nor would substations or switching stations.

Transmission Line

The mechanisms of collision are outlined above and would apply to the proposed transmission lines. The transmission lines have roughly two areas of greatest risk for avian collision. The agricultural land within the Fallon area offers foraging and nesting habitat for a variety of birds. With the exception of white-faced ibis, the majority of the species that utilize these habitats are less likely to collide with the transmission line, as there are already significant obstacles surrounding the fields which they navigate around, including distribution lines, trees, and buildings. The more open landscapes closer to where birds might congregate, such as adjacent to the Carson Pasture area, playa habitats, and near the golden eagle nesting and roosting habitats, likely have the greater risk (See **Appendix A**, **Figures 1-1**, Salt Wells Avian Protection Plan – North, and **1-2**, Salt Wells Avian Protection Plan – South).

4.2.3 Indirect Impacts

Avian species, typically raptors, take advantage of transmission lines, distribution poles, trees and other perch sites that provide viewing advantages. Greater visibility by raptors may result in increased hunting success. However, secondary effects on prey species is a concern where potential prey species concentrate, particularly along meadows and wetlands such as Carson Lake and Pasture where migratory and resident birds occur, including shorebirds and waterfowl. The proposed transmission line closest to these features is north of Carson Lake and Pasture, where it also crosses ditches and other water features particularly along the east-west alignment (see **Figure 1-1**). Transmission lines, depending on structure design may also afford suitable nesting substrates for birds. Cross arms on distribution or lower voltage lines and structures with lattice towers are commonly occupied by corvids and occasionally red-tailed hawks. The proposed design is not commonly utilized by corvids or hawks for nesting, though it could occur. Nesting by raptors or corvids would increase predation in habitat directly surrounding the nest, potentially resulting in a decline in the nesting success of migratory birds.

4.3 GOLDEN EAGLE NESTING TERRITORY

4.3.1 Territory Abandonment

Golden eagles likely utilize a majority of the Projects Area, which provides suitable foraging habitat, with the exception of the playa habitat. It is unlikely that foraging habitat would become unusable after the projects are constructed as only a fraction of the available habitat would be affected. Roost sites also occur within a portion of the Projects Area. During operation, daily trips to power plants and occasional maintenance activities would cause human disturbance; however these activities would likely not cause significant disturbance to the foraging or roosting territory. Short-term disturbance from drilling and construction would likely preclude foraging or roosting near these activities.

4.3.2 Nest and Roost Site Disturbances

One active nesting territory (GOEA 1) exists within an area where activities for geothermal well production have been permitted and are proposed, and the territory would be bisected by one transmission line **Figure 1-2**. This particular nest outcrop may become abandoned over time because: 1) the power line may pose enough of a barrier to foraging activities from the nest site, or 2) the proximity to human activities would cause sufficient disturbance that nesting activities would cease. The second recorded nesting territory (GOEA 2) is not likely to support golden eagle nesting and is excluded from evaluation and monitoring as a golden eagle nesting territory. GOEA 3, the 2010 occupied nest, is not anticipated to have project effects since Highway 50 bisects the nest from the projects.

4.3.3 Habitat Loss and Fragmentation

The majority of the habitat lost would be greasewood flat or mixed salt desert scrub, which provides foraging habitat for golden eagle. This habitat loss would not likely affect golden eagles, as only a fraction of the available foraging habitat would be impacted. However, a greater issue would be fragmentation of nesting territories and habitat, which would occur through expansion of roads, development of pipelines, and construction of transmission lines.

4.3.4 Disturbance Due to Ongoing Human Presence at the Facility

Disturbance at each facility would be primarily limited to the daily activities of plant staff. Daily trips are expected to be minor, and maintenance practices are limited at geothermal sites. Electrical substations and switching stations generally receive only minor maintenance and are largely quiet during their operational life.

4.4 CUMULATIVE IMPACTS

Effects that are likely to result from projects, which have been or will be carried out throughout the anticipated life of these projects, were analyzed in the project EIS (BLM 2011). A variety of existing and potential future actions may

result in incremental changes to wildlife habitat, including habitat fragmentation, noxious weed invasion, reduction of habitat through changes in water management (over drafting through wells, or cessation of water drainage), increased recreation, changes in land management, changes in cattle management, continued expansion of geothermal resources, and minerals extraction. A variety of races or organized events occur within the Projects Area, including OHV races and the Pony Express National Historic Trail Re-ride. One OHV race crosses through the Bunejug Mountains. Wildlife habitat use would be altered but the cumulative impacts are not considered likely to affect population viability of any one species.

Cumulative impacts could result in an increase in the number of transmission lines throughout the Lahontan Valley, increased loss of habitat, continued habitat fragmentation, and an increase in human activities such as recreation. These impacts could result in a decreasing number of avian species that utilize the Projects Area, particularly golden eagle.

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CHAPTER 5
AVIAN PROTECTION MEASURES AND RAPTOR-SAFE MODIFICATIONS

5.1 MORTALITY REDUCTION ACTIONS AND MODIFICATIONS

All aspects of the project components will be built using avian-safe practices suggested by APLIC (APLIC 2006, 1994). Furthermore, SPPC will include actions from the existing corporate APP to promote avian-safe practices and training for project staff (See **Appendix B**, NV Energy Corporate Avian Protection Plan).

5.1.1 Collision

The transmission lines poles would consist of steel or wood H-frame tangent structures, steel or wood three-pole dead-end heavy angle structures, steel single-pole heavy angle dead-end structures, and steel single-pole staggered tangent structures. The use of H-frame structures may increase the visibility of the structures to birds, since the poles would be grouped in pairs connected with cross-bracing. However, three-pole angle structures and single-pole structures require guy wires to support the angle poles and to plumb the structures. Since they are less visible, guy wires could increase the potential for collision. The angle structures are only used when necessary since they are at angle points.

Static lines, which are the uppermost line, are the smallest diameter lines, and therefore, potentially the most difficult for birds to see and avoid. Therefore, these are the lines which are commonly marked for visibility.

As outlined in the EIS, all areas of the transmission line corridor that crosses wetland, riparian, canal, grassland (particularly adjacent to or near Carson Pasture), or golden eagle nesting territory will incorporate flight diverters on the static line to make it more conspicuous. Where any pole requiring guy wires is located near areas of concentrated bird activity, guy wires will be marked to increase visibility where possible. Flight diverter types (e.g., FireFly bird diverters,

spiral vibration dampers, aviation balls) and locations will be determined through consultation with the BLM, USFWS, and/or NDOW; however it is anticipated that the locations would roughly correspond to areas targeted for mortality monitoring (see **Figures 1-1 and 1-2**). Spacing of flight diverters is generally specified by the manufacturers, as well as site conditions. Some flight diverters cause long-term maintenance issues due to failing during windstorms or icing. Regardless of design most of these devices have been demonstrated to be effective (Yee 2007, Barrientos 2011).

5.1.2 Electrocution

All aspects of the substations, switching stations and power lines will be constructed utilizing avian-safe practices as suggested by APLIC using industry standards (APLIC 1994, 2006). Any potential electrocution caused mortality to avian species will be captured under the reporting systems described in Chapter 7 of this APP.

5.1.3 Project Construction

All ground-disturbing activities will be conducted outside the migratory bird nesting season (March 15 – July 31). If ground-disturbing activities cannot be avoided during this time period, pre-construction nest surveys shall be conducted by a qualified biological monitor. For all non-raptor bird species, surveys shall cover all potential nesting habitat in and within 300 feet of the area to be disturbed. Surveys will be conducted between sunrise and 3 hours post-sunrise when birds are most active. Any disturbance or harm to active nests will be reported within 24 hours to the USFWS, the BLM, and NDOW upon detection. The biological monitor may halt work if it is determined that active nests are being disturbed by construction activities and the appropriate agencies will be consulted.

Prior to construction, golden eagle nests located within one mile of any construction activities will be monitored by a qualified biologist. If a golden eagle nest located with one mile of a construction area is active, a one mile no-disturbance buffer zone will be established. Construction may commence once a qualified biologist has determined the young have fledged or the nest is no longer active. Disturbance buffers for other raptors will follow the USFWS Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances (1999) to determine appropriate survey areas and disturbance buffers for active nests.

5.1.4 Indirect Impacts

To reduce perching along segments of the transmission line, installation of perch deterrents is recommended. A variety of perch deterrents have been developed for H-frame high voltage towers. Some have great success for deterring perching but offer suitable substrate for nest building (e.g., spikes and spines), while others limit perch time (e.g., narrow vertical steel plates) but still allow perching (Lamers and Collopy 2007). Improving nest features for corvids is not

advisable due to the long-term maintenance of nest removal. Therefore, SPPC will, in coordination with USFWS, BLM and NDOW, agree on the best available perch deterrent for the transmission line north of Carson Lake and Pasture. Exact locations of perch deterrent poles will be determined in consultation with wildlife agencies prior to construction of the line.

Annual inspection of lines and other areas where raptor or corvids might nest along the transmission lines is recommended in areas near Carson Lake and Pasture. Non-active nests are not protected by MBTA and removal should be conducted prior to the next breeding season. Should nesting activity become a long-term issue, measures to discourage nesting activities should be implemented. SPPC has a statewide depredation permit from USFWS for the removal of active corvid nests should the nests be deemed a fire risk. This permit could be expanded to include damage to wildlife (as a result of predation) allowing for removal of the nests during the breeding season (preferably prior to egg laying or hatching).

CHAPTER 6
IMPLEMENTATION

6.1 PERMIT COMPLIANCE

The Proponents may find it necessary in some situations to obtain federal and state permits regarding avian species other than golden eagles as it relates to mortality and avian nest removal and (see discussion under **5.1.3,** Indirect Impacts). These could include incidental take permits, collection or salvage permits, and nest removal and relocation permits. In such a situation, the Proponents may utilize existing SPPC permits outlined in the NV Energy APP or obtain them separately. Here the Proponents will work with the federal and state resource agencies listed in **Section 6.5**, Key Resources, to determine which permits are necessary. Under no circumstances will the Proponents perform any activity requiring a permit without first obtaining the proper permit or authorization to do so.

6.2 PERSONNEL TRAINING

SPPC's APP includes all aspects of corporate practices for bird management and protection. SPPC will implement the training program outlined in their corporate APP. Vulcan and Ormat will implement components of the SPPC training program as outlined in the corporate APP, where applicable and feasible. Personnel training is one of the primary steps. Commitment to training includes a program for all appropriate utility personnel, including managers, supervisors, line crews, engineers, dispatch, and design personnel that will be implemented to reduce avian mortalities along power line and substation structures. This training program will provide the informational resources necessary to improve employees' knowledge and awareness of the APP. The training program includes: reporting methods of avian mortality; avian protection protocols; disposing of carcasses; compliance with applicable regulations; and consequences of noncompliance with federal regulations.

6.3 QUALITY CONTROL

In accordance with the quality control guidelines in SPPC's Corporate APP, the Proponents will periodically assess various parameters and protection measures

described in the current APP to ensure that it is efficient and effective as possible. Parameters that the Proponents will assess include:

- remedial action techniques using follow-up surveys to evaluate their effectiveness in reducing avian mortality;
- avian protection devices to identify products preferred for avian protection as well as ease of application and durability (reducing maintenance costs);
- mortality reporting procedures to ensure that discoveries of avian mortalities are properly documented;
- response to avian mortalities to ensure that appropriate actions are taken in a timely manner;
- compliance with company procedures to ensure that personnel are consistently following company methods for avian-safe construction, mortality reporting, and nest management; and,
- public and agency opinions on system reliability and avian protection.

These parameters would be assessed during each review of the APP if necessary or if appropriate for that period. Additional parameters other than those listed above may be assessed during review of the APP if determined necessary by the Proponents. Although it is only practical to periodically revise or update the APP, the quality control component would be ongoing.

6.4 PUBLIC AWARENESS

A public awareness program can be an integral part of an APP. This program can be used to enhance general public awareness and support for a project's APP. It allows other stakeholders, such as government agencies, Native American tribes, non-profit organizations (e.g., Lahontan Audubon Society), wildlife rehabilitators, and other interested parties, an opportunity to provide input to the decision-making process, enabling all parties to work openly and collaboratively towards recommendations that can be effectively implemented. This collaboration often leads to improved relationships within the community and to more efficient and positive projects. The relationships developed through this process may also encourage the public to report bird mortalities and encourage them to seek assistance for birds that have been injured in power line related accidents (APLIC and USFWS 2005).

SPPC will include avian protection in its ongoing public awareness campaign, which may be concurrent with SPPC's own corporate public awareness campaign. Ongoing public awareness will include the innovative efforts to minimize avian mortalities, the effectiveness of the APP, and ongoing monitoring to detect problem areas. Public awareness materials may be made available through a variety of media.

6.5 KEY RESOURCES

The Proponents will consult with the following key resources to assist in providing expertise in permitting, bird populations and behavior, and avian-safe design features.

- USFWS
- NDOW
- BLM
- Nevada Natural Heritage Program
- Great Basin Bird Observatory
- Edison Electric Institute
- Avian Power Line Interaction Committee

These resources will be utilized as necessary and will further ensure that the Proponents have a successful and effective APP. Resources other than those listed may also be consulted, including consultants, company specialists, and other energy facilities with proven effective avian protection programs.

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CHAPTER 7
AVIAN REPORTING SYSTEM/MORTALITY AND MONITORING STUDIES

7.1 AVIAN REPORTING SYSTEM

In order to assess the effectiveness of the APP and prioritize avian protection needs, the Proponents will report, monitor, and manage all avian injury or mortality in accordance with the methodology below. All appropriate personnel, including managers, supervisors, line crews, and engineers would be provided with instruction on implementing the methodology and properly reporting avian mortality. Avian mortality reporting will be standard practice by the Proponents for the duration of the projects' operation. Avian nesting site reporting will also be performed according to the methodology below.

7.1.1 Detection

The detection of avian injury or mortality could occur through investigation of avian-caused power outages, through monitoring efforts during operation, and through incidental observations by the Proponents' personnel or others during the nesting season from March through July. To improve the probability that birds that have suffered injury or death are detected, the Proponents' field staff will be directed to remain alert for birds within and near the Projects Area. The detection of avian nest sites would occur through monitoring efforts during operation and through incidental observations.

7.1.2 Incidental Casualty, Injured Bird, and Nesting Bird Reporting System

Incidental reports of injured or dead birds associated with project facilities should follow SPPC's APP protocol, with direction from the NV Energy Environmental Services Department. At a minimum, reporting data should include: date and time carcass was discovered; location of the carcass (GPS coordinates, directions, etc.); pole/structure number, facility name, and species (if known); and name and phone number of reporting party. Additionally, pictures should be taken of the bird/carcass, the pole/facility, and the surrounding environment. Based upon the reporting party's information, the NV

Energy Environmental Services Department or environmental staff with Ormat and Vulcan will provide site investigation on raptor mortalities and determine cause of death, submit an internal Avian Injury/Mortality Report Form for future risk assessment, and complete USFWS's online "Bird Fatality/Injury Report" (found at https://birdreport.fws.gov/). Additionally, project-specific documentation should be reported annually to the USFWS. This reporting could be a separate annual submittal or incorporated with annual findings for other project-specific monitoring.

If avian nesting is observed through monitoring or incidental observations within the Projects Area (adjacent to or within project facilities), the Proponents' personnel will record the circumstances and conditions associated with the nest site and nest. The recorded information will be used to determine if the nest and its location present risk of injury or mortality to the nesting birds, and if the nest presents risk to any facility associated with the projects. Active nest removal is subject to a USFWS depredation permit; SPPC has such a permit, and any action must be coordinated through an environmental manager (as outlined in Section 6.1). Golden eagle nests are not part of this permit, and permits are not issued to remove golden eagle nests.

7.1.3 Remedial Action

While there are no legal provisions for an unauthorized take of protected species, the USFWS recognizes that some avian species may be killed even after all reasonable measures to avoid take are implemented. Based upon the information gathered from site investigations and reported on Avian Incident Forms, the Proponents will determine whether implementation of remedial protection measures is substantiated. This determination would be dependent on the frequency of incident occurrences at a particular utility facility, the species that suffered mortality, the likely effectiveness of remedial actions, and agency input and guidance. Likewise, these same factors would determine what types of remedial protection measures and practices the Proponents will implement if such measures are determined necessary. This plan recommends developing thresholds with agency input. A tiered approach (e.g., high, medium and low) is recommended for establishing mortality thresholds. As a starting point, species that are included the BLM list of sensitive species, USFWS MTBA birds of conservation concern, and game birds below desired conditions (See **Appendix C**, BLM Migratory Birds of Concern), as well as all diurnal raptors that do not occur on this list, would fall within the high category. Mortality of <10 individuals from the high category detected per year would trigger remedial action and mortality of one golden eagle would trigger remedial action. The medium category would include waterfowl and shorebirds that are not included on this list, which rely on Carson Lake and Pasture or wet playas for migration or breeding. Example species include white-faced ibis (*Plegadis chihi*), egrets (*Egretta* sp., *Ardea* sp), grebes, and ruddy duck (*Oxyura jamaicensis)*; however a list will be drafted in consultation with USFWS, BLM and NDOW. Mortality of species in the medium category would trigger remedial action should mortalities

fall above 20 individuals per yearly monitoring. Low concern species would include the upland associated birds not recognized on a state or federal list but protected under the MBTA; species such as horned lark (*Eremophila alpestris*) would fall in this category. Individuals detected during the mortality monitoring studies would need to fall above 25 individuals to trigger remedial action.

7.2 MORTALITY MONITORING STUDIES FOR COLLISION

7.2.1 Goals and Objectives

One goal of the post-construction monitoring program is to ensure that potential avian mortality resulting from interaction with the project facilities remain minimal. Another goal of the monitoring program is to allow the Proponents to identify risks and key avian interaction areas and develop adaptive management practices to minimize these risks. To achieve these goals the monitoring program would establish these objectives:

- Estimate avian mortality caused by all aspects of facility operation.
- Assess nesting habits and preferences on or near project facilities, if applicable.
- Assess territorial abandonment, nest avoidance, and changes in population status within and adjacent to the project footprint among avian species.
- Assess changes in avian behavior caused by all aspects of facility operation (e.g., noise, lighting).
- When adaptive management practices have been utilized to reduce bird mortality, assess the adequacy of avoidance practices and minimization measures that were implemented.

7.2.2 Monitoring Methods

Monitoring methods are constantly improving as researchers develop new and more accurate methods of survey and mitigation techniques. The Proponents will consider refinement to the monitoring methods and mitigation practices described below and adoption of new survey techniques or protocols as they become available. Any refinement of the monitoring program will occur through consultation with the USFWS, BLM, and/or NDOW. The monitoring program may be adjusted to include additional objectives as determined necessary during implementation and practice, or through consultation with the USFWS, BLM, and/or NDOW. Future monitoring may include remote devices such as line-strike detectors or video monitoring cameras. Such devices may reduce the overall cost of monitoring.

Duration and Timing

The monitoring program (i.e., frequency and duration) will be developed in consultation with the USFWS to capture differences in parameters due to seasonal and annual variability. Monitoring will focus on the collision hazard of

the transmission lines located on federally-administered lands, lands owned by the Proponents and privately owned lands in areas considered at risk for bird collision. Final areas to be monitored will be determined through coordination with wildlife agencies. However, these areas will generally include the east-west segment of the transmission line north of Carson Lake and Pasture and areas around active golden eagle nests, such as GOEA 1 south to GOEA 2. The proposed mortality monitoring study areas are shown on **Figures 1-1** and **1-2**. For the SPPC line, the study area covers 6.5 miles of the proposed transmission line corridor. The majority of this study area would cross private lands, thus prior approval from the landowners would be necessary. The monitoring study area adjacent to GOEA 1 and GOEA 2 (**Figure 1-2**) covers approximately 2 miles of the proposed transmission line corridor.

Monitoring programs will be modified, as appropriate, if mortality is regular and persistent, or if the projects result in mortality thresholds being reached (see **Chapter 7.1.3**). If regular mortality of a covered species is observed in a particular area or areas during the initial monitoring period, the USFWS could require monitoring to be extended in that specific area or areas. Monitoring will be scheduled to ensure that data collection occurs during breeding and migration periods, spring and fall, as bird use will vary seasonally. Monitoring will conducted during the same time annually. The frequency of mortality surveys will be based on USFWS recommendations, during these periods for three years of operation of the projects (USFWS 2010). The survey frequency could be adjusted for the subsequent years depending on the results, if appropriate.

Survey techniques for the monitoring program will be designed to capture typical biases: (1) removal by scavengers; (2) imperfect detection by human or canine searchers; and (3) site- and carcass-specific covariates that may influence the first two, such as vegetation height, type and density, carcass coloration and size, or microtopography. The survey strategy should be based on estimators outlined in Manuela Huso's "An estimator of wildlife fatality from observed carcasses" (Huso 2010), here Huso has developed a statistical model for scavenger removal, observer bias and other variables. Similar statistical models are being developed rapidly as a result of increased avian and bat mortality monitoring requirements for energy projects worldwide. Nonetheless, all survey techniques, bio-statistical models or other techniques used to assess mortality associated with the transmission lines will be developed in coordination with the USFWS or BLM.

Carcass Searches

The procedures and methodology that the Proponents would implement for tracking avian mortality resulting from collision would be performed under transmission lines and power poles within the proposed mortality monitoring study areas (Figures 1-1 and 1-2). The methods are broken into two primary components: 1) standardized carcass searches, and 2) an incidental casualty and injured bird reporting system, as outlined in Section 7.1.2.

Biologists trained in proper search techniques will conduct the fatality searches. The avian mortality monitoring study will begin once each of the transmission lines are constructed and operational. For the purposes of fatality searches, the following dates will be used to define seasons: spring migration (March 16 through May 15); breeding season (May 16 through August 15); and fall migration (August 16 through October 31). In reality, spring migration overlaps with part of the raptor breeding season.

Transects will be initially set at 6 to 10 meters apart, depending on habitat, parallel to the transmission line, and the searcher will walk along each transect searching both sides out to 3 to 5 meters for carcasses. Search speed will need to be adjusted by habitat type. For all casualties found, regardless of species, data recorded will include species, sex, age, date and time collected, location, distance to centerline of transmission line, condition, and any comments regarding possible causes of death. The condition of each fatality found will be recorded using the following condition categories:

- Intact – carcass is completely intact, is not badly decomposed, and shows no sign of being fed upon by a predator or scavenger.
- Scavenged – entire carcass shows signs of being fed upon by a predator or scavenger, or a portion(s) of a carcass in one location (e.g., wings, skeletal remains, legs, pieces of skin, etc.).
- Feather Spot – 10 or more feathers or 2 or more primaries at one location indicating predation or scavenging.

Total number of avian carcasses will be estimated by adjusting for "removal bias" (e.g., scavenging), searcher efficiency bias, and sampling effort through statistical models such as those developed by Huso. Carcasses where the cause of death is not apparent will be included in the fatality estimate. Including fatalities when cause of death is unknown will lead to an overestimate of the true number of collision fatalities; however, this is generally preferable to the high cost of necropsies. Should a diurnal raptor be located during the searches, a necropsy should be considered.

Reporting Monitoring Data

Reporting of the post-construction monitoring results would be compiled and submitted annually to the USFWS, the BLM, and/or NDOW. These reports should include incidental reports as well. The reports will include mortality information for avian species as a collective group, as well as on an individual species basis. The total mortality suffered by species will be further broken down into mortalities suffered at each major component of the utility system (e.g., transmission lines, etc.). Additionally, the report will list and tally avian species based on the tiered thresholds outlined in **Chapter 7.1.3**. Beginning with the report of the second year of monitoring, a summary of the mortality data from the previous year will be included in the report for comparison purposes. The ability to compare will help determine if adaptive management

practices are needed, where they are needed, and whether adaptive management practices that were implemented were effective or not. If mortality of a bald or golden eagle is observed, it will be immediately reported to the USFWS. Likewise, if unusually high numbers of mortalities (such as those described above in **Chapter 7.1.3** Redial Action) are occurring, the Proponents will notify the USFWS as soon as possible upon compiling data from each monitoring session.

7.3 MONITORING GOLDEN EAGLE NEST TERRITORY

Monitoring a golden eagle nesting territory will follow the survey methodology and protocols outlined in the USFWS *Interim Golden Eagle Technical Guidance and Protocols* (Pagel et al. 2010) for ground surveys or other methodology acceptable to USFWS, BLM, and/or NDOW. This survey protocol is intended to standardize procedures to identify occupied areas and inventory and monitor golden eagles within the direct and indirect impact areas of planned or ongoing projects where disturbance may cause take. Additionally, the protocols intend to minimize potential observer - related disturbance to golden eagles by requiring that surveys are conducted by experienced biologists.

Goals and Objectives

- Record and report occupancy and productivity of local golden eagle territories.
- Determine nesting chronology.
- Evaluate whether and which activities or conditions may be affecting golden eagles.
- Determine if the nesting territory within the Projects Area becomes abandoned.

7.3.1 Monitoring Methods

At least four surveys will be conducted during the year along all suitable nesting habitat for golden eagles within the Bunejug Mountain area (this includes GEOA 1 south to GOEA 2). Additionally, GOEA 3 should be periodically surveyed during the monitoring efforts, specifically for use by golden eagles. During breeding season, at least two surveys will be conducted to capture behaviors such as courtship, nest building, incubating, nestling period, and fledging. In addition, one survey in the spring season and one in summer will be conducted. Observation points should be established to offer an unobstructed view of the nest locations and surrounding habitat. Observations should last at least 4 hours per site and observations of behavior should be documented. All birds that are observed will be documented, especially those of other raptor species, particularly if nests are occupied or if courtship, territorial, or similar behavior is noted.

Duration and Timing

Surveys should commence during the first two weeks of March and should end by mid-June, unless unusual seasonal variation disrupts the breeding season. Surveys should be conducted prior to construction of the projects through the first seven years of operation or as required by USFWS. If no nesting activities occur at GOEA 1 or other active GOEA nest locations after seven consecutive years, the nesting territory will be considered abandoned after consultation with the USFWS.

Reporting Monitoring Data

Annual reports will be compiled and submitted to the USFWS, the BLM, and/or NDOW. The reports will include methodology, dates and times of nest territory monitoring, species encountered, other raptor behavior observed, observed use of or behavior around project components, golden eagle nesting behavior (courtship, nest building, incubating, feeding, etc.), and any observed nestling and/or fledgling. After the first year report, all subsequent reports will have the previous years' summaries included.

CHAPTER 8
ADAPTIVE MANAGEMENT ACTIONS

8.1 ADAPTIVE MANAGEMENT APPROACHES

8.1.1 Proactive Approach

The proposed facilities and structures will be built according to avian-safe standards (APLIC 2006, 1994). As such, the potential for an avian-utility interaction would be minimized, which can help prevent possible violations of the MBTA, ESA and Bald and Golden Eagle Protection Act.

8.1.2 Reactive Approach

Reactive measures would include protection measures implemented after bird mortality has occurred as outlined in Chapter 7.1.3. Most reactive measures would be developed through adaptive management practices, such as, but not limited to, utilization of different flight diverters, hazing, or for golden eagles alterations in vehicular traffic or other operational activities As incidents occur, the Proponents will respond appropriately through documentation via the Avian Reporting System (see **Chapter 7**). The Proponents will evaluate the circumstances leading to the incident and begin taking proper action to prevent similar incidents in the future in consultation with the USFWS.

8.2 IMPLEMENTATION

The measures identified in **Chapter 5** are the primary methods to reduce potential avian mortality for transmission line projects. However, where despite the use of such methods, the Proponent identifies unexpectedly high mortality or unexpected impacts to protected species or their habitats, the Proponents will work with agencies to identify appropriate adaptive management mortality reduction or mitigation measures.

8.2.1 Collision and Electrocution

Adaptive management measures for collision may be implemented after the mortality of one diurnal raptor or unusually high numbers of other types of migratory birds. Adaptive management measures must be tailored to the

identified problem (e.g., a specific species, specific location, or specific season) and would benefit from collaboration with the agencies to determine a solution. Additional monitoring may be an appropriate first step if it is not clear why the risks to birds were unusually high; however, monitoring alone will not be considered adequate mortality reduction or mitigation if that additional monitoring confirms elevated risk levels.

If additional monitoring confirms elevated risks to birds, then the following adaptive management measures may be considered:

- In extreme cases of documented mortality, the Proponents recognize that agencies will expect the Proponents to consider operational changes to reduce mortality. These actions may include utilizing new or different technology to reduce risk to migrating or resident birds.
- Obtain landowner agreement for modification of habitat within private lands, such as changes to hay mowing schedules, restoration, curtailing production, or other actions that may reduce or enhance bird use.
- Installation of nest platforms, which may increase avian productivity where nesting structures limit populations (APLIC 2006).

8.2.2 Loss of Golden Eagle Nesting Territory

USFWS requires compensation for projects which cause the permanent abandonment of a nesting territory. In order to avoid the long-term decline in the golden eagle population, compensating for the impact by replacing or providing substitute resources or environments is required. Should monitoring data suggest territory abandonment of the GOEA 1 or other active golden eagle nesting territory within the Bunejug Mountains after seven consecutive post-construction years of inactivity, the following would apply to the lost territory for reparation of the nesting habitat.

Habitat Equivalency Analysis

Habitat Equivalency Analysis is an analytical framework originally developed to calculate compensation for loss of ecological services resulting from degradation of a natural resource over a specific interval of time (NOAA 2006).

Essentially, the analysis calculates the amount (e.g., acres) of habitat to be created or enhanced to replace an equivalent level of ecological functions over time that were lost due to habitat degradation and loss. The Habitat Equivalency Analysis approach is not a valuation method but rather a "cost-replacement" method. The function of the analysis is to estimate the quantity of the ecological function associated with any given unit of lost or degraded habitat that would be equivalent (same type and comparative value) to a unit of the proposed replacement habitat (NOAA 2006). However, in actuality metrics for golden eagles should be in terms of productivity of a territory, specifically that of a

female within that territory. A golden eagle can live to 30 years of age. A female may produce other females over her lifetime and her surviving female off-spring have the potential to do the same over the course of their breeding lifetime. For statistical calculations of reproductive loss over time see Appendix F of the Draft Eagle Compensation Plan Guidance (USFWS 2011).

Habitat Analysis

The habitat in which the golden eagle nesting territory exists is far from pristine as it is located adjacent to private land that is currently an operational gravel quarry. The quarry does not operate full time and is not easily visible from the nest outcrop. Daily operational noise would not likely preclude nesting at the outcrop; blasting, however, would. A road approximately 0.30 mile (0.49 kilometer) from the outcrop bisects the nest outcrop from foraging habitat and eagles are easily flushed from the nest location with each passing vehicle. Within approximately one mile (1.6 kilometers) of the nest outcrop, there are three approved/permitted wells, five proposed wells, one existing well, and one proposed power plant. Geothermal drilling activities have occurred and will continue to occur. The Projects Area is also gaining popularity for recreation particularly in the form of OHV use.

Compensation for Loss of Nesting Territory

It is unclear how many females have had successful nesting attempts within the Projects Area within the past 5 years or more. Given the condition of GOEA 1, successful nesting has not occurred in likely over five years, possibly more. A new nest was incidentally located in 2011 which indicates this territory is active. In 2010, GOEA 3 may have been utilized by the same pair that has been associated with GOEA 1 and the new 2011 nest. It is clear that the current land uses and degradation of the habitat quality from cumulative events surrounding the nesting territories have potentially caused at least GOEA 1 to be an unviable nesting territory. However, compensation metrics must include productivity. Pre-project monitoring of the golden eagle nesting territories (those outlined in **7.3.1**) would help with the understanding of golden eagle use and potential issues with the lack of nesting success within the Projects area. Further coordination with the USFWS is required to determine the best approach in assessing applicable metrics for determining compensation measures for territory abandonment. Typical compensation may fund restoration projects, retrofitting other transmission lines to prevent golden eagle electrocution, road closures adjacent to active golden eagle nests, support for monitoring local or regional golden eagle populations, or other projects. Compensatory value of the lost nesting territory or territories or other metrics for valuation would be determined through consultation with the USFWS, BLM, and/or NDOW.

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CHAPTER 9
REFERENCES

APLIC (Avian Power Line Interaction Committee). 2006. Suggested practices for avian protection on power lines: The state of the art in 2006. Washington, D.C. and Sacramento, CA: Edison Electric Institute, Avian Power Line Interaction Committee, and California Energy Commission.

_____. 1994. *Mitigating bird collisions with power lines: the state of the art in 1994*. Washington, DC: Edison Electric Institute; 78 p.

APLIC (Avian Power Line Interaction Committee) and USFWS (US Fish and Wildlife Service). 2005. Avian protection plan (APP) guidelines, A joint document prepared by The Edison Electric Institute's Avian Power Line Interaction Committee and U.S. Fish and Wildlife Service, April 2005. Site accessed December 2010. http://www.aplic.org/resources.htm

Audubon Society. 2010. Lahontan Audubon Chapter website. Site accessed December 2010. http://www.nevadaaudubon.org/conservation.html

Barrientos, R., J.C. Alonso, C. Ponce, and C. Palacin. 2011 Meta-Analysis of the Effectiveness of Marked Wire in Reducing Avian Collisions with Power Lines. Conservation Biology. doi: 10.1111/j.1523-1739.2011.01699.x

BLM (Bureau of Land Management). 2011. *Salt Wells Energy Projects, Draft Environmental Impact Statement.* Stillwater Field Office, Carson City, NV.

Brown, B.T, G.S. Mills, C. Powels, W.A. Russell, G.D. Therres, and J.J. Pottie. 1999. *The influence of Weapons-testing noise on Bald Eagle Behavior*. Journal of Raptor Research. 3 3(3):227-232, 1999. The Raptor Research Foundation, Inc.

Chisholm, G. and L. Neel. 2002. *Birds of the Lahontan Valley*. University of Nevada Press, Reno, NV.

GBBO (Great Basin Bird Observatory). 2010. *Draft Comprehensive Bird Conservation Plan for Nevada*. http://www.gbbo.org/projects_bcp.html. Site accessed December 2010.

Harness, R. E., and K. R. Wilson. 2001. Electric-utility structures associated with raptor electrocutions in rural areas. Wildl. Soc. Bull. 29:612-623.

Huso, M. 2010. *An estimator of wildlife fatality from observed carcasses*. Envrionmetrics. Published online in Wiley InterScience. www.interscience.wiley.com DOI: 10.1002/env.1052

Kochert, M. N., K. Steenhof, C. L. Mcintyre and E. H. Craig. 2002. Golden Eagle (Aquila chrysaetos), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/684

Lammers, W.M. and M.W. Collopy. 2007. *Effectiveness of Avian Predator Perch Deterrents on Electric Transmission Lines.* The Journal of Wildlife Management, 71 (8): 2752-2758

Martin, G.R. and J.M. Shaw. 2010. *Bird collisions with power lines: Failing to see the way ahead?* Biological Conservation 143 (2010) 2695–2702. August 2010.

NOAA (National Oceanic and Atmospheric Administration). 2006. Habitat Equivalency Analysis: An Overview. http://www.darrp.noaa.gov/library/pdf/heaoverv.pdf

NV Energy. 2010. Nevada Power Company and Sierra Pacific Power Company d/b/a NV Energy Corporate Avian Protection Plan.

Ormat Technologies, Inc. (Ormat). 2008. Carson Lake Geothermal Project Plan of Development and Utilization. March 2008.

Pagel, J.E., D.M. Whittington, and G.T. Allen. 2010. Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations. Division of Migratory Birds, US Fish and Wildlife Service. February 2010.

USFWS (US Fish and Wildlife Service). USFWS Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances (1999). http://www.fws.gov/wyominges/Pages/Species/Species_SpeciesConcern/Raptors.html

_____. 2009. Final Environmental Assessment Proposal to Permit Take Provided Under the Bald and Golden Eagle Protection. Washington D.C. Accessed December 2010. http://www.fws.gov/migratorybirds/CurrentBirdIssues/BaldEagle/FEA_EagleTakePermit_Final.pdf

_____. 2010. Region 8 Interim Guidelines for the Development of a Project-Specific Avian and Bat Protection Plant for Solar Energy Plant and Related Transmission Facilities. 15 pp.

____. 2011. Draft Eagle Compensation Plan Guidelines. Accessed August 2011. http://www.fws.gov/windenergy/docs/ECP_draft_guidance_2_10_final_clean_omb.pdf

Vulcan Power Company (Vulcan Power). 2009. Salt Wells Geothermal Development Project 120 MW Plan of Utilization. August 2009.

Yee, M.L. 2007. Testing the Effectiveness of an Avian Flight Diverter for Reducing AvianCollisions with Distribution Power Lines in the Sacramento Valley, California. California Energy Commission, PIER Energy - Related Environmental Research Program. CEC-500-2007-122. Accessed August 2011. http://www.energy.ca.gov/2007publications/CEC-500-2007-122/CEC-500-2007-122.PDF

APPENDIX A
FIGURES

Figures 1-1, Salt Wells Avian Protection Plan – North, and 1-2, Salt Wells Avian Protection Plan – South, can be found on the following pages.

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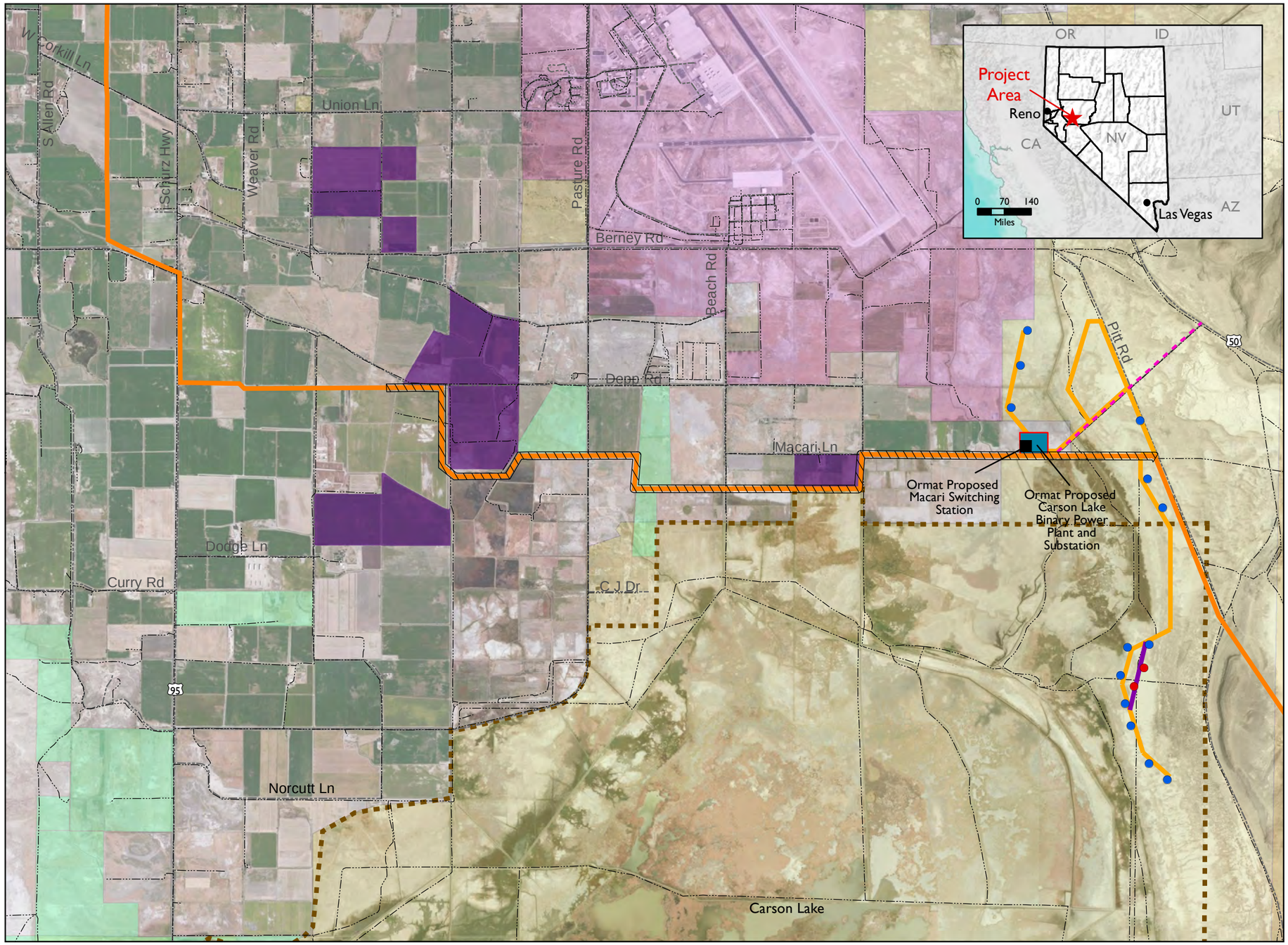


Salt Wells Avian Protection Plan- North

Churchill County, Nevada

SPPC Facilities
- Alternative 3 (Preferred) 230 kV Transmission Line Corridor
- Alternative Macari Fiber Optic Line

Ormat Facilities
- Proposed Pipeline
- Alternative Pipeline
- Proposed Well Pad
- Alternative Well Pad

Other Features
- Mortality Monitoring Study Area
- CLP Title Transfer
- Existing Conservation Easement

Land Ownership
- Bureau of Land Management
- Bureau of Reclamation
- Department of Defense
- Fish and Wildlife Service
- Private Land (Including city and county lands)

*Based on data received from Churchill County on July 26, 2011. Only existing conservation easements within the Region of Influence along the transmission line alternatives are displayed.

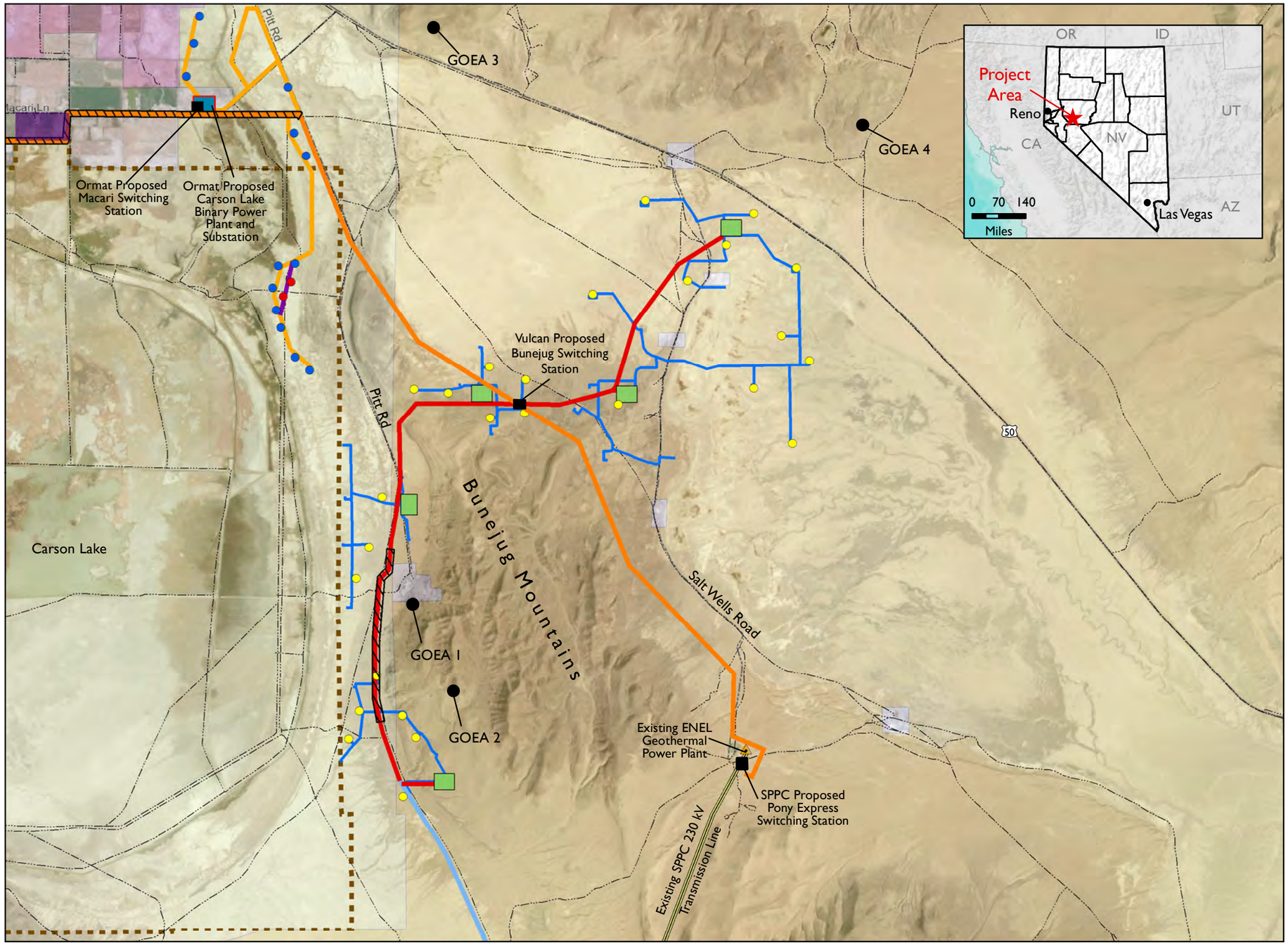
Source: BLM, Ormat, SPPC, Vulcan 2010, Churchill County 2011, Navy 2011

0 0.5 1
Miles

N

August 2011
NAD 1983 HARN StatePlane Nevada West
Disclaimer: No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Figure 1-1



Salt Wells Avian Protection Plan- South

Churchill County, Nevada

Vulcan Facilities
- Vulcan Project Area Boundary
- Proposed Well Pad
- Proposed Steamfield Pipeline and Associated Road

Vulcan Facilities Alternate
- Proposed 230 kV Interconnection Line
- Alternative 230 kV Interconnection Line
- Proposed Power Plant and Substation

Ormat Facilities
- Proposed Pipeline
- Alternative Pipeline
- Proposed Well Pad
- Alternative Well Pad

SPPC Facilities
- Alternative 3 (Preferred) 230 kV Transmission Line

Other Features
- Mortality Monitoring Study Area
- Golden Eagle Nests
- Existing Power Plant
- Proposed Switching and Substations
- Existing 230kV Transmission Line
- CLP Title Transfer
- Existing Conservation Easement

Land Ownership
- Bureau of Land Management
- Bureau of Reclamation
- Department of Defense
- Private Land (Including city and county lands)

Source: BLM, Ormat, SPPC, Vulcan 2010, Churchill County 2011, Navy 2011

0 0.5 1

Miles

N

August 2011
NAD 1983 HARN State Plane Nevada West
Disclaimer: No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Figure 1-2

APPENDIX B
NV ENERGY CORPORATE AVIAN PROTECTION PLAN

The NV Energy Corporate Avian Protection Plan can be found on the following pages.

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NEVADA POWER COMPANY AND
SIERRA PACIFIC POWER COMPANY
d/b/a NV ENERGY
CORPORATE AVIAN PROTECTION PLAN

2010

TABLE OF CONTENTS

LIST OF APPENDICES

I. NV ENERGY BIRD MANAGEMENT POLICY

Bird interactions with power lines may cause bird injuries and mortalities, which, in turn, may result in outages, violation of bird protection laws, grass and forest fires, or raise concerns by employees, resource agencies, and the public. NV Energy (NVE) is committed to minimizing its impact on endangered species and migratory birds, while providing reliable, cost effective electrical services and incorporating the best available technology in protecting Nevada's wildlife resources.

The goals of NVE in achieving avian protection include:

- Ensure NVE's actions comply with the Migratory Treaty Act of 1918 (16 U.S.C. 703-712), the Bald and Golden Eagle Act of 1940 (16 U.S.C. 668), and the Endangered Species Act of 1973 (16 U.S.C. 1538).
- Document and report bird mortalities, identify problem poles, lines, and problem nests to retrofit and prevent future mortalities.
- Provide information, resources, and training to improve its employees' knowledge and awareness of the Avian Protection Plan (APP).
- Construct all new or rebuilt facilities in areas of raptor use to NVE's avian-safe protection standards in accordance with Avian Power Line Interaction Committee and Edison Electric Institute's "Suggested Practices for Avian Protection on Power Lines."
- Retrofit or modify power poles where protected and migratory birds were injured or killed in past occurrences.
- Participate with public and private organizations in programs and research to reduce detrimental effects of bird interactions with power lines and equipment.

To assure a continued commitment toward avian protection, NVE will coordinate efforts with members as an ad hoc Avian Protection Steering Committee. The committee coordination would consist of any or all of the following:

1. NVE Executive of Environmental Services
2. Committee Administrator
3. NVE Executive(s), Regional HUB Operations
4. NVE Manager(s) of Lines Construction & Maintenance
5. NVE Environmental Scientist(s)
6. USFWS Representative(s)
7. NDOW Representative(s)

II. TRAINING

A training program for all appropriate utility personnel, including managers, supervisors, line crews, engineers, dispatch, and design personnel will be implemented to reduce avian mortalities along power line and substation structures. This training program will provide the informational resources necessary to improve its employees' knowledge and awareness of the APP. The training program will include:

A. Reporting Methods of Avian Mortalities

In order to assess and prioritize avian protection needs, mortality reports will be a key component in identifying and reducing the impact on avian electrocutions and outages. Management and utility personnel will be trained in providing the appropriate reporting information to NVE's Environmental Department *(see Appendix A - NVE's Avian Mortality Report Form).*

An additional information source is the company's outage reporting system. The Environmental Services Department will access this system routinely to determine if listed outages were bird related and initiate corrective actions.

NVE's Environmental Services Department will continue to investigate bird related mortalities gathered from NVE's monitoring practices, state and federal agencies, and the public. NVE's District Managers and personnel will be informed not to move any bird and to allow NVE to investigate, transport, or properly dispose of the carcass based upon NVE's permit requirements and direction from the USFWS.

B. Avian Protection Installation Protocols

Based upon the information gathered from site investigations and mortality incidents, NVE's Environmental Services Department will coordinate avian protection remediation activities with standards and the District Manager. The District Manager shall be responsible in providing the avian protection remediation activities within the existing operations and maintenance budget, while maintaining the District's ability to provide reliable electrical services to the customer.

Projects of greater magnitude and resources, defined as capital improvements, will require additional planning and logistical coordination between NVE's Project Manager and the current existing practices to comply with the avian protection guidelines provided in the APP.

C. Disposing of Carcasses

It is strictly prohibited for field personnel to transport or dispose of a bald or golden eagle carcass. All eagles will be immediately reported to, and recovered by, NVE's Environmental Services Department and transported in accordance to its permit conditions. Upon being notified, USFWS will direct NVE on retrieval and receipt of the eagle carcass.

Disposing of all other raptors and bird carcasses on-site may only occur based upon consent from the USFWS. NVE's Environmental Services Department must be notified immediately of an avian electrocution or collision and informed of the species killed, if known. To assist the field personnel in bird identification, handouts will be provided to each District Office for distribution to the operation fleets. If unsure of the species, an NVE representative will mobilize to the site for species determination and/or retrieval.

D. Compliance with Applicable Regulations

The practices established in this APP are designed to meet the requirements of the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA), and the Endangered Species Act (ESA). It is NVE's mission to retrofit structures with a history of avian injuries/mortalities and ensure that new construction meets the required guidelines established by the Edison Electric Institute.

E. Consequences of Non-Compliance to Federal Regulations

A violator of the MBTA by the killing or taking of a migratory bird may be fined up to $15,000 and/or imprisoned for up to six months for a misdemeanor violation.

A violator of the BGEPA may be fined up to $100,000/$200,000 (individual/organization) and/ or imprisoned for up to one year. The second offense is a felony and upon conviction may result in a $250,000/$500,000 (individual/organization) fine or be imprisoned for two years or both.

A violation of the ESA, which includes threatened species, prohibits take which includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect. The unlawful take of an ESA listed species may result in a fine of $100,000/$200,000 (individual/organization) or imprisonment for one year or both.

The MBTA, BGEPA, and ESA have no provisions for allowing incidental take, therefore, allowing federal and state wildlife enforcement agencies to impose penalties for each incident. *Depending on the species, a bird could be protected by all three Acts.*

III. PERMIT COMPLIANCE

NVE maintains two federal permits regulated by the USFWS and one state permit regulated by the Nevada Division of Wildlife (NDOW) permit to include, but not limited to, nest relocation, temporary possession, depredation, salvage/disposal, and scientific collection. Renewal of these permits, notification procedures, compliance, and annual reporting will be the responsibility of NVE's Environmental Services Department *(See Appendix B-NVE's Special Purpose and Depredation Permits)*. The permits and their conditions are as follows:

USFWS- Depredation Permit:

Authorizes NVE to remove and destroy up to 100 active Raven nests when built on power line structures and substations that are an imminent fire hazard. NVE may also remove and destroy nests in location/heights that are not safe to reach or relocate. Whenever possible, the permit recommends that chicks should be rescued and transferred to a licensed wildlife rehabilitator. **All NVE personnel must first coordinate with the Environmental Services Department before actions can be taken to exercise the conditions of this permit.**

USFWS-Special Purpose Permit*:*

Authorizes NVE for emergency removal of nests from transmission and distribution systems to prevent electrocution of birds and prevent power outages; allows for removal and/or relocation of active nests (eggs or young present) that could be affected by construction, reconstruction, modification or maintenance activities; allows for recovery of sick or injured migratory birds and transportation of those birds to a wildlife rehabilitation facility holding federal and state permits. Dead birds may be picked up and disposed of as directed by the USFWS Law Enforcement Office. Eagles and endangered species must be recovered and delivered/received to the USFWS Law Enforcement Office. **All NVE personnel must first coordinate with the Environmental Services Department before actions can be taken to exercise the conditions of this permit.**

NDOW-Scientific Collection Permit:

Authorizes NVE to remove inactive nests from electrical transmission & distribution systems to prevent electrocutions and power outages (excludes nests of eagles and endangered species); allows for removal or relocation of active nests that could be affected by construction, reconstruction, modifications, or maintenance activities- on a case-by-case basis; pick up sick or injured birds and other non-listed wildlife species and transport to rehabilitation facilities holding state and federal permits; salvage dead birds and other non-listed wildlife species; eagles and endangered species must be delivered/received by the USFWS. **All NVE personnel must first coordinate with the Environmental Services Department before actions can be taken to exercise the conditions of this permit.**

IV. CONSTRUCTION AND MODIFICATION DESIGN STANDARDS

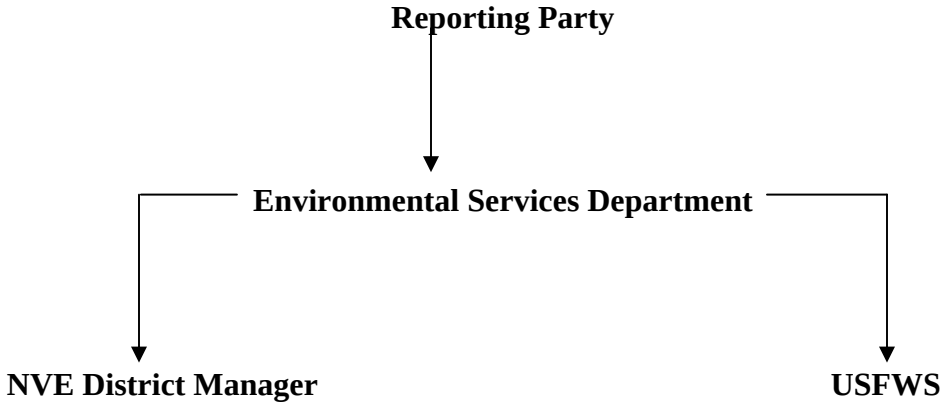
Avian protection construction on both new and existing lines shall meet the specifications provided in the Final Project Report published in 2006 by the Edison Electric Institute and the Avian Power Line Interaction Committee (*Suggested Practices for Avian Protection on Power Lines.).* NVE's APP requires that these standards be implemented when providing avian protection.

Avian-safe construction, designed to prevent electrocutions, should provide separation of 60 inches between energized conductors and grounded hardware. If such spacing is not possible, the energized parts and hardware should be covered meeting the 60 inches separation standard of the APLIC guidelines.

V. AVIAN MORTALITY REPORTING AND PROTOCOL

A well implemented reporting system can assist in pinpointing the location of mortalities and establish priorities in avian protection. Managers, supervisors, and field personnel will be trained in accordance to the APP's reporting requirements and protocol.

NVE'S AVIAN MORTALITY REPORTING PROTOCOL



The reporting party or District Manager of an avian mortality will immediately contact NVE's Environmental Services Department with the following information*: (See Appendix D-NVE's Environmental Services Contacts)*

Date/time carcass was discovered
Location of the mortality (GPS coordinates, directions, etc…)
Pole/structure number and/or facility name
Species (if known)
Name and phone number of reporting party

If possible, pictures should be taken of the bird/carcass, the pole/facility, and the surrounding environment. Based upon the reporting party's information, NVE's

Environmental Services Department will provide site investigation on raptor mortalities and determine cause of death, submit an internal Avian Injury/Mortality Report Form for future risk assessment, and complete USFWS's online "Bird Fatality/Injury Report."

VI. RISK ASSESSMENT METHODOLOGY

NVE's Environmental Services Department will gather and review the available data accumulated from site investigations and mortality reports addressing areas of high avian use, avian mortality, and problem nests. The information received from the risk assessment data will be the key component in prioritizing avian protection remediation on existing power lines and setting standards for new construction activities. NVE's Environmental Services Department will serve as the liaison with the District Managers and NVE's Avian Protection Committee in prioritizing avian protection within NVE's transmission and distribution system.

VII. MORTALITY REDUCTION MEASURES

Mortality reduction measures will be implemented based upon the information provided in the risk assessment data. The key to reducing avian mortality is focusing efforts on the areas that pose the greatest risk to migratory birds and ensuring that future construction incorporates the designs and guidelines recommended by USFWS, EEI and APLIC. NVE's Environmental Services Department will work closely with District managers and wildlife agencies to determine and prioritize these areas for remedial action.

Management support is critical in implementing an avian mortality reduction plan. The key components to this plan include:

- Assessment of facilities to reduce risk
- Allocation of resources
- Standards for new or retrofit avian-safe construction
- Budget for operation and maintenance (O&M) and capital investment
- System for tracking remedial actions and associated costs
- Timely implementation of remedial measures
- Positive working relationship with state and federal wildlife agencies.

VIII. NVE'S ROLES AND RESPONSIBILITIES

NVE Avian Protection Committee:

1. Establish a budget and allocation of resources to implement an effective corporate supported APP.

2. Meet on a periodic basis to review the existing APP and determine if improvements can be made to maximize the effectiveness of the plan.

3. Review the remedial actions completed within the Districts on an annual basis through the risk assessment report and set goals for the following year.

4. Maintain a continued dialogue with agencies and interested parties to address concerns and improve the process of reducing avian mortality.

5. Provide a public outreach mechanism through fact sheets, newsletters, brochures, and websites conveying NVE's commitment to avian species protection.

NVE Environmental Services Department:

1. Act as the primary contact for NVE's District Managers, regulatory agencies and private parties reporting avian mortalities from power line electrocutions.

2. Provide on-site investigations of reported avian mortalities. The investigations will provide information gathering to prevent future mortalities and to provide the information needed for the notification process required by the USFWS.

3. Act as the contact for field personnel in salvage and disposal options of avian electrocution and collision mortalities.

4. Coordinate remedial actions with the District Managers to prevent future mortalities in areas of recorded electrocutions and collisions.

5. Provide the required reporting of avian mortalities by completing the avian mortality form and USFW's online "Bird Fatality/Injury Report." An annual mortality report will also be competed in compliance to the NVE's permit requirements.

6. Act as an informational source to NVE's Avian Protection Committee.

District Managers:

1. Notify NVE's Environmental Service Department on all avian mortalities immediately with the information outlined in the reporting protocol requirements.

2. Coordinate with line crews to remediate problem power lines based upon requests from NVE's Environmental Services Department and dialogue with federal and state wildlife agencies.

3. Provide guidance to field personnel in coordination with NVE's Standards Department in compliance to NVE's APP and the National Electric Safety Code when implementing avian protection.

Field Personnel:

1. Notify NVE's Environmental Services Department or District Manager immediately of an avian mortality.

2. Complete all avian protection remediation activities in accordance to NVE's APP and the National Electric Safety Code.

IX. QUALITY CONTROL

On an annual basis, the NVE Avian Protection Committee will review existing practices of the APP and ensure its efficiency and effectiveness. The review process will include internal operating procedures, more effective avian protection technologies, and budget review to meet the requirements of NVE's APP. Notification of changes to the APP will be addressed in follow up training sessions and collaboration with NVE's District Managers and personnel.

In addition to the internal quality controls, an annual progress report will be prepared for the USFWS and NDOW. This progress report will show the remedial activities and locations from the past year. The report will also provide initiatives set for the following year.

X. PUBLIC AWARENESS

NVE will develop a method for educating the public about NVE's commitment in protecting and preserving wildlife in Nevada and the Tahoe Basin, the company's avian protection program, and its successes in avian protection. Public awareness and education can be accomplished through NVE's online publications and leaflet information included in customer billing statements.

XI. KEY RESOURCES

NVE will consult with a list of experts to address avian protection issues including company specialists, consultants and state and federal resource agencies. The following resources include:

- United States Fish and Wildlife Service
- Nevada Division of Wildlife
- NVE's District Managers
- Edison Electric Institute
- Avian Power Line Interaction Committee

APPENDIX-A

NV Energy
Avian Mortality Report Form

AVIAN MORTALITY REPORT

Date of Report: Time of Call:

Source of Information (name/dept):

Phone #: Date/time carcass was discovered:

Species (if known):

Nest? Taken/salvaged? Eggs? (Qty.) Taken/salvaged?

Is the bird banded/marked? If yes, provide band #:

Sex, if known:

Suspected Cause of Death:

Weather Conditions:

Facility or line name, and voltage:

Pole or structure number:

Describe location by reference to nearest road/landmarks, etc. (draw map)

GPS (lat/long or UTM):

Carcass collected by: Date/Time:

USFWS rep. Notified : Date/Time:

Carcass delivered/disposed to:

APPENDIX-B

NV Energy
Depredation and Scientific Collection Permits

JIM GIBBONS
Governor

STATE OF NEVADA
DEPARTMENT OF WILDLIFE
1100 Valley Road
Reno, Nevada 89512
(775) 688-1500 • Fax (775) 688-1595

KENNETH E. MAYER
Director

DOUG HUNT
Deputy Director

PERMITTEE:

Paul Aguirre
NV Energy
PO Box 98910, MS 30
Las Vegas, NV 89151-00001

Permit No.: S 31390
Date Issued: 1/15/2009
Date Effective: 1/15/2009
Period of Sampling: See Condition #4
Expiration Date: 12/31/10
Annual Report Due: 1/30/10 &1/30/11
Fed. Permit No.: MB025355-0*(exp. 3/31/09)*

SCIENTIFIC COLLECTION PERMIT NO. S31390

In compliance with the conditions listed below and pursuant to provisions of NRS 503.597 & 503.650, the permittee, Sierra Pacific Resources and its subsidiaries, Nevada Power Co and Sierra Pacific Power, each permi year during the designated sampling period, is authorized to:

a. Remove inactive nests from electrical transmission & distribution systems to prevent electrocution of birds and associated power outages (excludes nests of eagles & endangered species);
b. Remove and/or relocate active nests that could be affected by construction, reconstruction, modification, operations or maintenance activities of NPC facilities with prior written amendment of the federal permit – on a case-by-case basis;
c. Pick-up sick or injured birds and other non-listed wildlife species and transport to rehabilitation facilities permitted by the Service (*required for migratory birds*) and NDOW; and
d. Salvage dead birds and other non-listed wildlife species. Eagles and endangered species disposition will occur according to direction received for the U.S. Fish & Wildlife Service Special Agent and/or NDOW Biologist. Other salvaged species must be delivered to Don Baepler, Barrick Museum, UNLV.

CONDITIONS:

1. A copy of this permit and any permits required by the U.S. Fish and Wildlife Service must be in the possession of the permittee and any authorized collectors while conducting collection/salvage activities. The permittee must comply with all terms, conditions and restrictions of the federal permit. This permit is invalid for the taking, collection, or salvage of migratory birds, threatened or endangered species, absent any permit required by the Service for that activity.

2. Authorized Sampling Area: Statewide

   This permit does NOT authorize trespass and/or collecting activities on state or federal wildlife refuges or reserves, or other public and private property without the permission from landowner or custodian.

3. Number Authorized: As encountered.

4. Period of Field Collection: January 15, 2009 through December 31, 2010.

5. Destination of Collection: Salvaged bird and non-listed wildlife species, Barrick Museum, UNLV.

6. Annual Report: A record will be created for each specimen (or group of specimens of a single species) taken at each site-locality. "Taken" means salvaged; captured & released; collected; banded; trapped & killed; seined; netted; snared; sacrificed; reduced to possession; etc. The following information will be recorded for each specimen taken: By date, the number of specimens of each species taken; species name; the habitat type where each specimen was taken; numeric breakdown of sex whenever possible; and a description of the location where each specimen was taken, by the following method: (*Don't use common geographic names*)
– UTM Coordinates, NAD 83, Zone 11, rounded to the nearest meter; *OR*
– Coords. of longitude & latitude, WGS 84, *in decimal-degrees to 4 places (117.2456°)*; *OR*
– Township, Range and 1/4 Section;
The records must be submitted to the Nevada Department of Wildlife, License Office – Scientific Collection Report, 4600 Kietzke Ln D-135, Reno, NV 89502, by 1/30/10 for 2009 "take" activities; and 1/30/11 for 2010 "take" activities. Digital reports in Excel spreadsheet (*preferred*) or Quattro Pro are accepted (please follow column sequence as outlined in the Department report form, 22.85-5.)

7. A copy of all pertinent research or technical papers must be submitted to the Department.

8. All specimens authorized under the authority of this permit, including offspring, are property of the State Nevada and as such, they shall not be sold, bartered, traded, converted to personal use or otherwise disposed of without written approval of the Department, except as provided in Condition #5. This condition remains in effect indefinitely.

9. No fee may be charged to the public for the privilege to view wildlife which is held under the authority of this permit.

10. Permit Cancellation: A violation of a condition or stipulation is cause for the cancellation of the permit.

11. Additional Authorized Collectors: Employees of NV Energy at the direction of the permittee.

Julie Meadows
Program Officer I

jgm
enclosure

DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

3-200
(1997)

FEDERAL FISH AND WILDLIFE PERMIT

1. PERMITTEE

NEVADA POWER COMPANY
ATTN PAUL AGUIRRE
PO BOX 98910 MAIL STA 30
LAS VEGAS, NV 89151
U.S.A.

2. AUTHORITY-STATUTES
16 USC 703-712

REGULATIONS
50 CFR Part 13
50 CFR 21.41

3. NUMBER
MB069492-0

4. RENEWABLE	5. MAY COPY
☒ YES	☒ YES
☐ NO	☐ NO

6. EFFECTIVE	7. EXPIRES
06/01/2009	05/31/2010

8. NAME AND TITLE OF PRINCIPAL OFFICER (If not an individual)
ANTHONY GIANNANTONIO
ENVIRONMENTAL SCIENTIST

9. TYPE OF PERMIT
DEPREDATION

10. LOCATION WHERE AUTHORIZED ACTIVITY MAY BE CONDUCTED
RECORDS FOR THIS PERMIT MUST BE MAINTAINED AT
Nevada Power Company
Pearson Bldg, 6226 W Sahara Ave; Las Vegas, NV

11. CONDITIONS AND AUTHORIZATIONS

A. GENERAL CONDITIONS SET OUT IN SUBPART D OF 50 CFR 13, AND SPECIFIC CONDITIONS CONTAINED IN FEDERAL REGULATIONS CITED IN BLOCK #2 ABOVE, ARE HEREBY MADE A PART OF THIS PERMIT. ALL ACTIVITIES AUTHORIZED HEREIN MUST BE CARRIED OUT IN ACCORD WITH AND FOR THE PURPOSES DESCRIBED IN THE APPLICATION SUBMITTED. CONTINUED VALIDITY, OR RENEWAL, OF THIS PERMIT IS SUBJECT TO COMPLETE AND TIMELY COMPLIANCE WITH ALL APPLICABLE CONDITIONS, INCLUDING THE FILING OF ALL REQUIRED INFORMATION AND REPORTS.

B. THE VALIDITY OF THIS PERMIT IS ALSO CONDITIONED UPON STRICT OBSERVANCE OF ALL APPLICABLE FOREIGN, STATE, LOCAL OR OTHER FEDERAL LAW.

C. VALID FOR USE BY PERMITTEE NAMED ABOVE.

Species authorized:
COMMON RAVEN - Nest Authorized: 50
D. Authorized to remove/destroy up to 50 active Raven nests when built on powerline structures and substations and are an **imminent** fire hazard. The nests are built in locations/heights that are not safe to reach and relocate. Whenever possible, chicks should be rescued and transferred to a licensed wildlife rehabilitator.

E. Must comply with all standard depredation permit conditions attached. Report of nests taken is due within ten days of expiration of permit; report form will be provided by ssuing permit office.

F. Must comply with all attached standard depredation permit conditions (attached).

Authorized: This permit cancels permit previously issued to Sierra Pacific Power Company. Locations authorized under permit are Sierra Pacific Resources and its subsidiaries, Nevada Power Company and Sierra Pacific Power Company facilities, and employees under direction of Principal Officer. One report shall be filed yearly summarizing activities (numbers killed or transferred to rehab facilities) conducted under this permit.

☒ ADDITIONAL CONDITIONS AND AUTHORIZATIONS ALSO APPLY

12. REPORTING REQUIREMENTS
ANNUAL REPORT DUE: 6/10

ISSUED BY	TITLE	DATE
Pamela E. Tate-Hall	PERMIT ADMINISTRATOR - FWS REGION 1	06/16/2009

Migratory Bird Permit Office
911 N.E. 11th Avenue
Portland, OR 97232-4181
503-872-2715 Fax: 503-231-2019
tami_tatehall@fws.gov

Standard Conditions
Migratory Bird Depredation Permits
50 CFR 21.41

All of the provisions and conditions of the governing regulations at 50 CFR part 13 and 50 CFR part 21.41 are conditions of your permit. The standard conditions below are additional provisions and conditions of your permit. Failure to comply with the conditions of your permit could be cause for suspension of the permit. If you have questions regarding these conditions, refer to the regulations or, if necessary, contact your migratory bird permit issuing office. For copies of the regulations and forms, or to obtain contact information for your issuing office, visit: www.fws.gov/permits/mbpermits/birdbasics.html.

1. To minimize the lethal take of migratory birds, you are required to continually apply non-lethal methods of harassment in conjunction with lethal control.

2. Shotguns used to take migratory birds can be no larger than 10-gauge and must be fired from the shoulder. You must use nontoxic shot listed in 50 CFR 20.21(j).

3. You may not use blinds, pits, or other means of concealment, decoys, duck calls, or other devices to lure or entice migratory birds into gun range.

4. You are not authorized to take, capture, harass, or disturb bald eagles or golden eagles, or species listed as threatened or endangered under the Endangered Species Act found in 50 CFR 17, without additional authorization.

   For a list of threatened and endangered species in your state, visit the U.S. Fish and Wildlife Service's Threatened and Endangered Species System (TESS) at: www.fws.gov/endangered.

5. If you encounter a migratory bird with a Federal band issued by the U.S. Geological Survey Bird Banding Laboratory, Laurel, MD, report the band number to 1-800-327-BAND or www.reportband.gov.

6. This permit does not authorize take or release of any migratory birds, nests, or eggs on Federal lands without additional prior written authorization from the applicable Federal agency.

7. This permit does not authorize take or release of any migratory birds, nests, or eggs on State lands or other public or private property without prior written permission or permits from the landowner or custodian.

8. Unless otherwise specified on the face of the permit, migratory birds, nests, or eggs taken under this permit must be:
   (a) turned over to the U.S. Department of Agriculture for official purposes,
   (b) donated to a public educational or scientific institution as defined by 50 CFR 10, or
   (c) completely destroyed by burial or incineration.

9. Subpermittees must be at least 18 years of age. As the permittee, you are legally responsible for ensuring that your subpermittees are adequately trained and adhere to the terms of your permit. You are responsible for maintaining current records of who you have designated as a subpermittee, including copies of letters you have provided.

10. You and any subpermittees must carry a legible copy of this permit and display it upon request whenever you are exercising its authority.

11. You must maintain records as required in 50 CFR 13.46 and 50 CFR 21.41. All records relating to the permitted activities must be kept at the location indicated in writing by you to the migratory bird permit issuing office.

12. Acceptance of this permit authorizes the U.S. Fish and Wildlife Service to inspect any wildlife held, and to audit or copy any permits, books, or records required to be kept by the permit and governing regulations.

13. You may not conduct the activities authorized by this permit if doing so would violate the laws of the applicable State, county, municipal or tribal government or any other applicable law.

(DPRD - 4/7/2008)

DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

3-201
(1/97)

FEDERAL FISH AND WILDLIFE PERMIT

2. AUTHORITY-STATUTES
16 USC 703-712

REGULATIONS *(Attached)*
50 CFR Part 13
50 CFR 21.27

1. PERMITTEE

NEVADA POWER COMPANY
ATTN A. GIANNANTONIO
PO BOX 98910 MAIL STA 30
LAS VEGAS, NV 89151
U.S.A.

3. NUMBER
MB025355-0

4. RENEWABLE	5. MAY COPY
☒ YES	☒ YES
☐ NO	☐ NO

6. EFFECTIVE	7. EXPIRES
04/01/2006	03/31/2009

8. NAME AND TITLE OF PRINCIPAL OFFICER *(If #1 is a business)*
ANTHONY GIANNANTONIO
SR ENVIRONMENTAL SCIENTIST

9. TYPE OF PERMIT
SPECIAL PURPOSE

10. LOCATION WHERE AUTHORIZED ACTIVITY MAY BE CONDUCTED
RECORDS MAINTAINED AT NEVADA POWER COMPANY
PEARSON BUILDING - 6226 W SAHARA AVE; LAS VEGAS
CLARK COUNTY, NEVADA

11. CONDITIONS AND AUTHORIZATIONS:

A. GENERAL CONDITIONS SET OUT IN SUBPART D OF 50 CFR 13, AND SPECIFIC CONDITIONS CONTAINED IN FEDERAL REGULATIONS CITED IN BLOCK #2 ABOVE, ARE HEREBY MADE A PART OF THIS PERMIT. ALL ACTIVITIES AUTHORIZED HEREIN MUST BE CARRIED OUT IN ACCORD WITH AND FOR THE PURPOSES DESCRIBED IN THE APPLICATION SUBMITTED. CONTINUED VALIDITY, OR RENEWAL, OF THIS PERMIT IS SUBJECT TO COMPLETE AND TIMELY COMPLIANCE WITH ALL APPLICABLE CONDITIONS, INCLUDING THE FILING OF ALL REQUIRED INFORMATION AND REPORTS.

B. THE VALIDITY OF THIS PERMIT IS ALSO CONDITIONED UPON STRICT OBSERVANCE OF ALL APPLICABLE FOREIGN, STATE, LOCAL OR OTHER FEDERAL LAW.

C. VALID FOR USE BY PERMITTEE NAMED ABOVE.

D. Authorized emergency removal of rests from electric transmission & distribution systems to prevent electrocution of birds & associated power outages. Notification to this office required within 72 hours of such activity (phone 503-872-2715; fax 503-231-2019). This authority excludes all endangered species and bald or golden eagle nests.

E. Removal and/or relocation of active nests (eggs or young present) that could be affected by construction, reconstruction, modification or maintenance of Sierra Pacific Resources and its subsidiaries, Nevada Power Company and Sierra Pacific Power Company facilities, only with prior written amendment to this permit on a case-by-case basis.

F. Sick or injured migratory birds may be picked up and transported to wildlife rehabilitation facility holding state and federal permits. Dead birds may be picked up and deposed of as directed by USFWS Law Enforcement office in Las Vegas (702-388-6380) or Nevada Department of Fish and Game. Eagles and endangered species must be turned over to Las Vegas USFWS office.

H. Maintain records in accordance with 50 CFR 13.46 and 50 CFR 21.27.

I. Report of activities due each January 31 for previous calendar year. Required information includes number of active nests removed/relocated, disposition and dates; number and species of birds transported to rehab facilities; and number/species of dead birds picked up and what final disposition was. Report forms will be provided yearly.

☒ ADDITIONAL CONDITIONS AND AUTHORIZATIONS ALSO APPLY

12. REPORTING REQUIREMENTS
ANNUAL REPORT DUE: 1/31

ISSUED BY
Pamela E. Tate-Stall

TITLE
PERMIT ADMINISTRATOR - FWS REGION 1

DATE
06/22/2006

Migratory Bird Permit Office
911 N.E. 11th Avenue
Portland, Oregon 97232-4181
Phone 503-872-2715 Fax 503-231-2019
tami_tatehall@fws.gov

Standard Conditions
Migratory Bird Depredation Permits
50 CFR 21.41

Standard conditions for depredation permits are below. These conditions are in addition to the conditions listed on the face of your permit. All of the governing regulations at 50 CFR Part 13 are also conditions of your permit. Failure to comply with the conditions of your permit could be cause for suspension of the permit. If you have questions regarding the conditions of your permit, refer to the regulations or contact the migratory bird permit office that issued your permit. Regulations and contact information are available on the Internet at: http://www.permits.fws.gov/mbpermits/birdbasics.html

1. You, and any subpermittees, must carry a legible copy of this permit, and display it upon request whenever you are exercising its authority.

2. You may not exercise the authorization granted by this permit contrary to the laws of the applicable state, county, municipal, or tribal government, or any other applicable law.

3. You are not authorized to take, capture, or harass bald or golden eagles or federally listed threatened or endangered species.

4. You may not use blinds, pits, or other means of concealment, decoys, duck calls, or other devices to lure or entice birds into gun range.

5. Shotguns used to take birds can be no larger than 10 gauge and must be fired from the shoulder. You must use nontoxic shot listed in 50 CFR 20.21(j).

6. To minimize the lethal take of birds, you are required to continually apply non-lethal methods of harassment alternately with lethal control.

7. You are not authorized to take any birds, nests, or eggs, or to release birds on federal or state lands or other public or private property without additional written authorization, permission, or permits from the applicable federal or state agency, landowner, or custodian.

8. Unless otherwise specified on the face of the permit, birds, nests, or eggs taken under this permit must be (1) turned over to the U.S. Department of Agriculture for official purposes, (2) donated to a public educational or scientific institution as defined by 50 CFR 10, or (3) completely destroyed by burial or incineration.

9. You must maintain records of the activities conducted under your permit for a period of 5 years from the date of expiration of the permit (50 CFR 13.46), including the following information: species (common name); date taken; location where taken; number of birds killed or relocated; number of eggs, or nests with eggs, taken or relocated; name of person taking birds; and the final disposition of the birds or eggs.

10. You must keep all records relating to the permitted activities at the location(s) identified in writing by you to the issuing office.

11. Acceptance of this permit authorizes the Fish and Wildlife Service to inspect any wildlife held, and to audit or copy any permits, books, or records required to be kept by the permit and governing regulations.

(9/12/2005)

Appendix-D

NV Energy
Environmental Services Contact Information

ENIRONMENTAL SERVICES:

Starla Lacy
Executive of Environmental Services
slacy@nvenergy.com
(702) 402-5669

Lee Simpkins
Team Leader, Environmental Services
lsimpkins@nvenergy.com
(775) 834-3528

Nevada Power Company Environmental Scientist:

Primary Contact:

Paul B. Aguirre — Office: (702) 402-2647
paguirre@nvenergy.com — Cell: (702) 236-8670

Sierra Pacific Power Company Environmental Scientist:

Primary Contact:

Jason Benson — Office: (775) 834-3150
jbenson@nvenergy.com — Cell: (775) 223-1174

APPENDIX C
BLM MIGRATORY BIRDS OF CONCERN

The BLM Migratory Birds of Concern can be found on the following pages.

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BLM Migratory Birds of Concern[a] - Carson City District Office				
Species	*USFWS Birds of Conervation Concern*		USFWS Game Birds Below Desired Condition	BLM Sensitive Species
	BCR 9	BCR 15		NV BLM
American black duck			X	
American wigeon			X	
American woodcock			X	
Bald eagle	X	X		
Band-tailed pigeon			X	
Black-chinned sparrow	X			
Black rosy-finch	X			X
Black swift	X	X		
Black tern				X
Bobolink				X
Brant (Atlantic)			X	
Brant (Black)			X	
Brant (Gray-bellied)			X	
Brewer's sparrow	X			
Burrowing owl				X
Canada goose (Cackling)			X	
Canada goose (Dusky)			X	
Calliope hummingbird	X	X		
Canvasback			X	
Cassin's finch		X		
Common eider			X	
Crissal thrasher				X
Eared grebe	X (nb)			
Emperor goose			X	
Ferruginous hawk	X			X
Flammulated owl	X	X		X
Golden eagle	X			X
Gray vireo				X
Greater scaup			X	
Green-tailed towhee	X			
Harlequin duck			X	
Juniper titmouse				X
King rail			X	
Least bittern				X
LeConte's thrasher				X
Lesser scaup			X	
Lewis's woodpecker	X	X		X
Loggerhead shrike	X			X
Long-billed curlew	X			X
Long-eared owl				X
Lucy's warbler				X
Mallard			X	
Marbled godwit	X (nb)			
Mottled duck			X	
Mourning dove			X	

Species	*USFWS Birds of Conervation Concern*		USFWS Game Birds Below Desired Condition	BLM Sensitive Species
	BCR 9	BCR 15		NV BLM
Northern goshawk				X
Northern pintail			X	
Olive-sided flycatcher		X		
Peregrine falcon	X	X		X
Phainopepla				X
Pinyon jay	X			X
Prairie falcon				X
Redhead			X	
Red-naped sapsucker				X
Ring-necked duck			X	
Sage sparrow	X			
Sage thrasher	X			
Sandhill crane				X
Sandhill crane (Greater)				
Short-eared owl				X
Snow goose			X	
Snowy plover	X			X
Swainson's hawk				X
Tricolored blackbird	X			X
Trumpeter swan			X	
Vesper sparrow				X
Virginia's warbler	X			
White-fronted goose (Greater)			X	
White-fronted goose (Tule)			X	
White-headed woodpecker	X			
Williamson's sapsucker	X	X		
Willow flycatcher	X	X		
Wood duck			X	
Yellow-billed cuckoo (western U.S. DPS)[f]	X			X[g]
Yellow-breasted chat				X
Yellow rail	X			

[a] Migratory Birds of Concern are a subset of the species protected by the MBTA.

[b] There are no federally listed species on the Carson City District Office.

[c] USFWS. 2008. Birds of Conservation Concern 2008 (*BCC 2008*). BCRs 9 and 15 apply to the Carson City District Office. (nb) = non-breeding in the BCR.

[d] FWS Game Birds Below Desired Condition.

[e] The CA BLM list applies to the Carson City District Office that occurs in CA (Alpine, Lassen,

[f] ESA candidate.

[g] The cuckoo is not on the BLM NV sensitive species list but should be because it is on the FWS website for several counties in NV and the BLM sensitive species list is to include candidates according to BLM Manual 6840.